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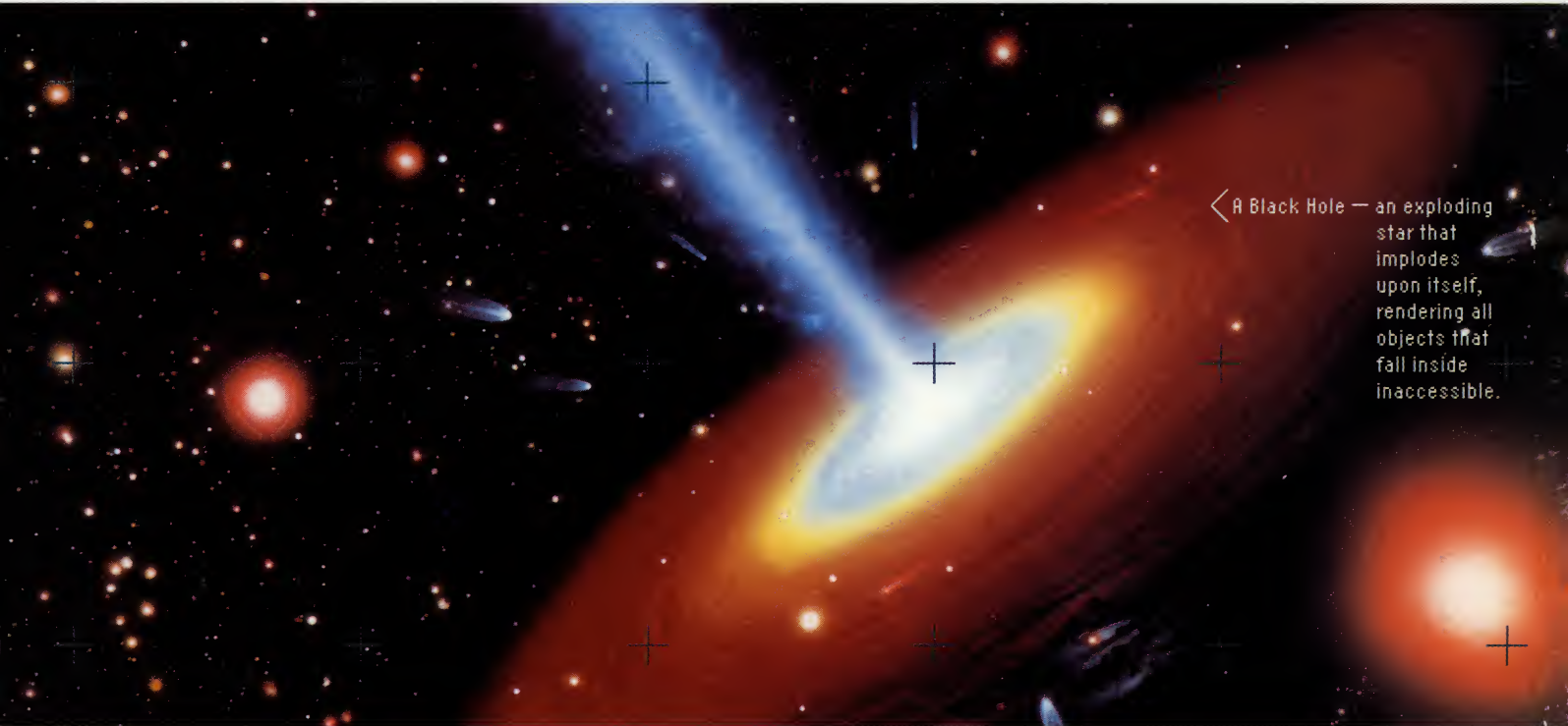
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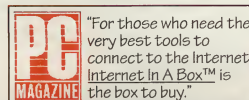
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"BEST PRODUCTS OF 1994"
PC MAGAZINE - JANUARY 10, 1995



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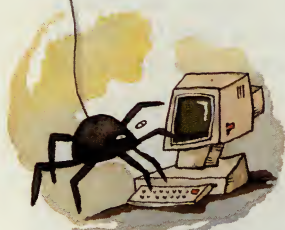
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Web Fever: Catch It!

“CHECK OUT OUR HOME page.” I hear this more and more, and am seeing more of them, as myriad companies, government agencies, and organizations launch home pages—in a kind of domino effect.

The growth of the World-Wide Web has been astronomical. In just three years the number of Web sites has risen from 100 to more than 10,000, and about 40,000 should be online by the end of this year.

The World-Wide Web brings a new paradigm to the Net—*hypermedia*, a collection of multimedia documents connected by hyperlinks. The technology enables users to click on words in a document to call forth other documents, link after link, from around the world—including text, images, sounds, and movies.

The Web home page is a new type of entity: a combination frontispiece, greeting room, table of contents, hub, and launching pad. Creating attractive and well-laid-out home pages is a new art form that has spawned a new job category for graphics designers and ad agencies.

While the home page is the portal to a Web site, the browser is the door to all the home pages. Mosaic—a graphical browser and watershed product that helped bring the Web to prominence—has been challenged by a host of upstarts. The new crop of speedy, fuller-featured browsers (see “Browser Shootout,” p. 46) is testament to the surging power of Internet commercial development. Good news for dial-up users are SlipKnot and TIA—new tools that enable you to have a graphical interface to the Web with neither a direct nor SLIP connection.

The Web’s format and the opportunity to reach millions of potential customers on the Net are conspiring to attract all types of commercial ventures—malls, catalogs, storefronts, and fruit stands—in true gold rush fashion. Non-profit organizations of every ilk also are establishing a presence on the Web.

Many companies are aiming to use the Web as a marketing medium, and browser-based technology is being developed to make secure Internet transactions possible (see “Wheels of Commerce,” p. 62 and “Cashing In,” Feb. *IW*). Advertising and selling on the Net are key trends that will be the focus of our next two issues.

Publishing ventures also are stampeding to the Web. The new modes of presentation made possible have only begun to be explored—including virtual reality applications (see “The Outer Limits” in last month’s issue). We at Mecklermedia are experiencing the thrill of Web publishing firsthand as we mold our recently launched MecklerWeb site, on which

expanded versions of *Internet World* are being made available with hyperlinks (<http://www.mecklerweb.com>).

A major reason for the Web’s growing popularity is that it’s fun. You can get lost for hours clicking on links and surfing through documents. Web sites range from serious to silly (for a silly sampling, visit Useless WWW Pages at <http://www.primus.com/staff/paulp/useless.html>).

Helping to fuel the Web revolution is the Internet itself, a communications matrix on which new ideas and technologies are shared almost instantaneously, spurring creativity among developers and millions of users. The sense of participating in a revolutionary new medium and the opportunity for commercial gain are driving rapid innovation.

All of this hubbub is having a dizzying effect on users trying to explore and benefit from the new medium. As Aaron Weiss shows in his guide to navigating the Web (“Hop, Skip, and Jump,” p. 41), it defies any single approach to indexing and searching. Is this a flaw of the Web or part of its beauty?

In this issue, we try to throw our arms around the Web. Richard Wiggins traces the Web’s history, Eric Richard examines its anatomy, and Peter Kent rounds up all the available browsers and rates them.

Kevin Savetz tells how publishers are taking advantage of the new Web model, while Jeff Ubois brings us an interview with CommerceNet executive director Cathy Medich and EIT founder Marty Tenenbaum, the mind behind the Silicon Valley project.

All work and no play makes us all dull. Besides his navigational guide, Weiss divulges a slew of sites to add spice to your Web life. Eric Richardson takes us for a walk on the Web’s weirder side, and Jeri Dies provides a tour of international culture and language Web sites. To help us upgrade our home pages, Kenny Greenberg offers some decorating tips, and budding Webmaster Andrew Kantor tells us how we can rearrange our start-off pages for greater efficiency and pleasure.

Rounding out the issue, Rosalind Resnick familiarizes us with what’s happening south of the border; cyberlibrarian Cynthia James-Catalano dispenses useful news and information resources; and Jerry Pournelle shares his meandering search for Internet meaning. Finally, Joel Snyder offers his curmudgeonly views on the World-Wide Web.

The Web revolution is changing the Internet order and bringing us into an unknown future. Will the Web become a booming commercial arena? Will it cause Gopher to become extinct? Will ISDN finally take off? Tune in to find out.

Meanwhile, the Web awaits you. Take the plunge, and we’ll see you on the Net.



Michael Neubarth

MICHAEL NEUBARTH

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Circle Number 58

The Fourth Media

IS THE WORLD-WIDE WEB THE "FOURTH" MEDIA, a technology positioned to take its place with the big three—print, radio, and television—as a mass-market means of communications? It's hard to create an argument against it. The Web has all of the social, technical, and economic fundamentals which could help it achieve this prominence.

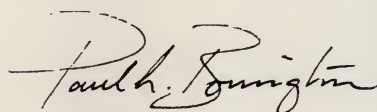
The Web offers users an experience that current media can't deliver. It is interactive and not bound by the limits of time and space. Print media, in contrast, is finitely determined by the editor and the space afforded within a publication folio. Television and radio are controlled by programmers and the limits of time. Content is delivered in half-hour or hour segments—or in the case of commercials, 30 seconds or one minute.

Technically, the graphics, sound, and video images of the Web will make it a dynamic and entertaining experience. While we're not quite there yet for full-blown multimedia applications on the Net, they will come. It took a long time before radio technology could be delivered static-free in stereo and for color television to become the norm rather than the exception.

Unlike the early days of radio and television, the Web has the advantage of a huge existing installed base of potential users. Judging from the market's reception to *Internet World* this past year, they're eager to get involved. In the United States, the installed base of computers at major commercial sites exceeds 85 percent, and more than 30 million households now have at least one PC. Out of a projected 25 million users connected to the Internet worldwide, Web users have grown to a population of more than two million seemingly overnight.

If the above reasons are not enough to ensure a prominent place for the Web, the industry momentum surely will. Recent product announcements from AT&T, IBM, MCI, Microsoft, Novell, and other industry leaders—and the embrace of the Internet by the commercial online services—mean that the Internet is mainstream. These companies will help drive Web development as in a self-fulfilling prophecy.

Will the Internet and the World-Wide Web replace print, radio, or television? It's unlikely. Reporting, interpreting, and editing information as well as creating and producing entertainment will always be a valuable service of the media. Who will become the Gutenberg, Orson Welles, and William Paley of the emerging fourth media? Time will tell.



PAUL BONINGTON
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Circle Number 10

KUDOS FOR SECURITY

Bravo for your issue on Internet security (Feb. *IW*)! I'm sure it will become a collector's item in more homes than my own.

In the 1950s, television boosters preached that TV would beget an enlightened society. In reality, the boob tube created a consumer society of couch potatoes. In the 1990s, many people assume that the Internet will give birth to an enlightened society. If we are not careful, the Internet may create a surveillance society far beyond George Orwell's nightmare scenario.

I applaud your authors for telling readers what they can do to help steer the Internet away from an Orwellian future.

ANDRE BACARD

Author, *The Computer Privacy Handbook: A Practical Guide to E-Mail Encryption, Data Protection, and PGP Privacy Software*
abacard@well.com

KEEP ON TREKKING

I enjoyed reading your article about the history of *Star Trek* on the Internet ("Star Trek: The Net Generation," Feb. *IW*). Paramount appreciates the enthusiasm for *Star Trek* on the Internet and, in fact, has contributed to the resources available.

In October 1994 Paramount launched an official Web site to herald the theatrical release of *Star Trek: Generations*. Recently, the starship *U.S.S. Voyager* began her journey on the Web with a presence that boldly goes where no site has gone before. As a member of the crew, you learn all about the *Voyager*, her mission, personnel, technology, Earth support resources, and your assigned communication station. Complete your mission successfully and Captain Janeway herself will congratulate you.

Featuring audio and video created by the stars of *Star Trek: Voyager* specifically for the Web, the site's coordinates are <http://voyager.paramount.com>.

LEONARD J. WASHINGTON, II
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TREK EXTRA

In the February issue of *Internet World*, you featured a list of *Star Trek* mailing lists and WWW pages. I run a mailing list called trekchatter@umich.edu.

People who are interested may join the list by filling out a WWW form, located within my home page at <http://www.umich.edu/~gmbrown>. From there, they can select the icon for my *Star Trek* page and follow the appropriate link for the subscription form. Non-WWW users can send e-mail to trekchatter-request@umich.edu for more info.

GEOFF RODHAM BROWN
gmbrown@umich.edu

AIDS ADDENDUM

We are pleased that you mentioned the databases at the National Library of Medicine (NLM) in your recent article "Addressing AIDS" (Feb. *IW*). I am writing to clarify some of the statements made about NLM databases.

The NLM operates the MEDLARS system, which contains more than 40 databases dealing with biomedical and environmental health information. MEDLINE is the primary database, with over seven million bibliographic records. In addition, MEDLARS includes three AIDS databases: AIDSLINE, a bibliographic citation file; AIDSTRIALS, a databank of clinical trial information; and AIDSDRUGS, a databank listing information about drugs used within the clinical trials. DIRLINE, a database of directory information, includes a subset file that lists AIDS organizations.

In January 1994, the NLM announced that access to its AIDS databases and DIRLINE would be provided at no cost to users on the Internet. Individuals can access MEDLARS directly by simply calling the NLM and requesting a "regular code."

Using a regular code, a user can access MEDLINE at a charge of approximately \$2 to \$3 for a typical search and can use the AIDS databases and DIRLINE at no charge. For anyone who wants access to only the free databases, a

quick call to the NLM and a request for an "AIDS code" will give them access.

NLM also produces Grateful Med (GM) software, which provides a user-friendly front end to searching the NLM's MEDLARS family of databases. The \$29.95 package is available for PCs and Macs. Applications for GM software and the MEDLARS database access codes can be obtained by calling the NLM at (800) 638-8480.

We appreciate your attempts to disseminate information about AIDS on the Internet.

ANNE WHITE-OLSON
AIDSLINE Coordinator
National Library of Medicine
anne_white-olson@occhost.nlm.nih.gov

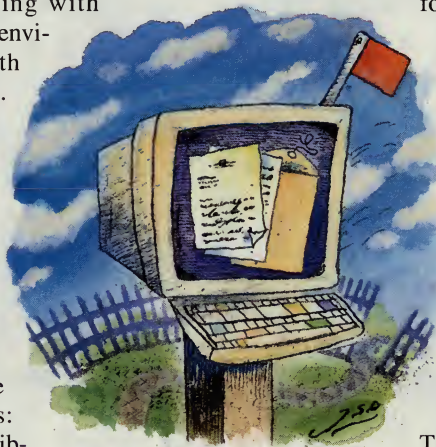
JANET'S ALIVE AND WELL

As the collaborator on the science series for ABC TV's *Schoolhouse Rock*, I am disconcerted by Jack Esteve's comment in the January Letters to the Editor that "no one remembers Interplanet Janet." Not only was Janet part of the series that won an Emmy award for Outstanding Children's Instructional Series, but *Schoolhouse Rock* is now back on Saturday morning TV and may even produce a film on computer-based telecommunications.

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CATCH OUR ACT

The Hamnet Players mentioned in February's *Surfboard* are not the only theater group online. A group called the Fates of Dragon's Lair have been presenting online theater since March of 1994 at the Theater of the Absurd. The theater, otherwise known as Tota, is part of the Rivendell chatlines reachable by telnetting to **204.156.18.1 7777, 5000, or 3000**. The Fates rehearse their plays and use ASCII art as backdrops and scenery during the presentations.



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Circle Number 20

The plays are all original scripts. The Fates are more than happy to chat with anyone interested in Tota, or you can e-mail me for more information on the cyberplays.

BENNETT BLAUSTEIN
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NET POWER

Your Best and Worst of 1994 (Jan. *IW*) brought back quite a few memories of the past year on the Net. By far the most memorable event that I experienced was one that showed the power of the information flow.

On election eve in November, I was logged into the #election channel on Internet Relay Chat. You could feel the flow of the "quiet revolution" that was happening as the polls closed around the country and people logged in to report the results in their respective areas.

We didn't need the highly paid news analysts to tell us what was happening in this country. We could experience it for ourselves. Whether Democrat or Republican, the awesome force of information that night kept us all on the edge of our chairs staring at our monitors.

CHIP TAYLOR
Tacoma, Wash.
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RIGHT ON

Kudos to Mike Godwin for his account of Santa Rosa Junior College's problems with the Office of Civil Rights' attempts to stifle free speech. I find it particularly distressing to discover that government lawyers want to "balance" the First Amendment against Title IX.

Constitutional guarantees trump statutes, and Godwin does an outstanding job in exposing government casuistry in inventing "written conduct" as a way to limit politically incorrect free speech. Being offended is the price you pay for living in a free society.

JOHN K. WILDGEN
Covington, La.
jkwpo@uno.edu

NET MAG FOR REAL PEOPLE

Thank you for putting together a magazine

that doesn't treat a lot of us as newbies. I find your articles thought-provoking, funny, and interesting. I would like to see some more practical uses of the Net and real-life examples. This would perhaps encourage people to have a go themselves, take a few risks, and enjoy surfing the Net. Congratulations on a job well done.

MICHAEL NOBBS
Perth, Australia
michaeln@yarrow.wt.uwa.edu.au

WWW TOP 10

I was just reading February's Letters to the Editor and I think the WWW Top 10 suggestion by Michael Schoolnik is a great idea. Here are a few suggestions for your Top 10 links:

- 1) Image Processing with Live Video Sources <http://tns-www.lcs.mit.edu/cgi-bin/vs/vvdemo>
- 2) Mandelbrot and Julia Set Explorer <http://aleph0.clarku.edu/~djoyce/julia/explorer.html>
- 3) Veb Village <http://manor.york.ac.uk/cgi-bin/vv.sh>
- 4) Play Battleships <http://manor.york.ac.uk/htdocs/bships.html>
- 5) Universal Access Inc. BlackJack Server <http://www.ua.com/blackjack/bj.html>

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GREAT STUFF!

Congratulations on a great February issue! I sent my subscription in the same day that I bought it, and I look forward to future issues. I was particularly delighted with Joel Furr's article on the alt.folklore hierarchy. It's nice to see a major Internet magazine relying on the knowledge of resident long-time Netters, rather than someone like John Dvorak or Penn Jillete.

Re Michael Schoolnik's letter (Feb. 1995) on a WWW Top 10: I would like to propose the cthouse.org British Comedy Pages. The site, maintained by James Kew (j.kew@ic.ac.uk), offers transcripts, FAQs, episode guides, and pictures as well as links to related pages. So give it a visit if you can at <http://cthouse.org:8000/BritishComedy>.

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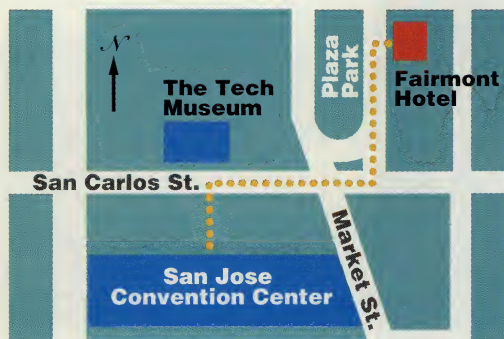
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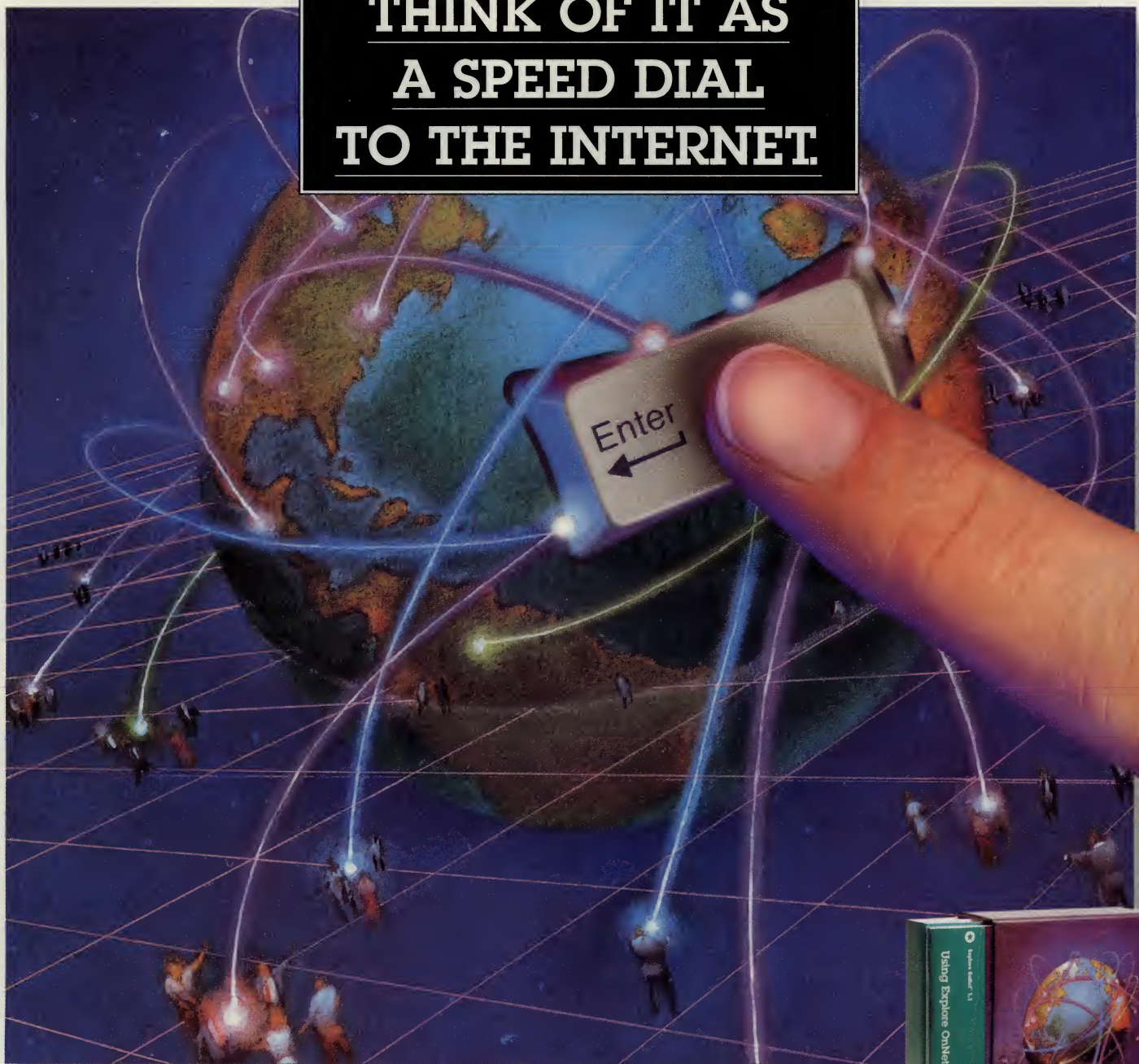
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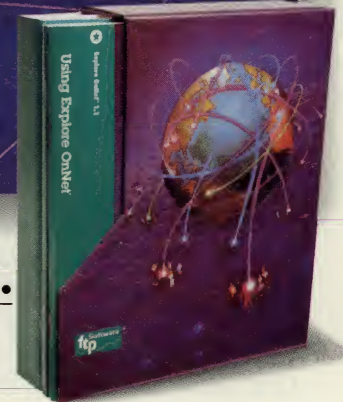
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Circle Number 48



By Andrew Kantor

Rift Over GIF

Unisys Patent Requires Licenses

makers of image software that reads or writes GIF (graphic interchange format) files will now have to pay royalties to Unisys Corp. for any new software they develop. Unisys holds the patent for the LZW (Lempel Zev Welch) compression scheme, an integral part of the GIF specification. Originally developed by CompuServe, GIF has become the most widely used graphics file standard on the Internet and is incorporated in a variety of products, most notably Mosaic, Netscape, and other World-Wide Web browsers.

The patent does not apply to GIF images, only to software that reads or writes the format, and the decision by Unisys to begin active enforcement of the LZW patent as it relates to GIF software will not affect end users directly.

In an agreement with Unisys, CompuServe has purchased a license for the compression scheme for a substantial—and undisclosed—price, according to Pierce Reid, spokesperson for CompuServe.

CompuServe has negotiated a pass-through license

agreement with Unisys in which developers of software for CompuServe using the GIF specification pay a one-time fee of \$1 plus \$0.15 for every copy of the software that is registered. "CompuServe is not profiting in any way from this," according to Reid, who said that the majority of the fee goes to Unisys.

"Unisys came to us in January 1993," Reid said. "It took us 18 months to work through the initial [license] agreement." Besides the pass-through license, the agreement includes a monthly royalty paid to Unisys.

According to a statement from Unisys, "Our only in-

tended action in this area is negotiating with software developers." Unisys will not require licensing of any software that was introduced before January 1, 1995, according to Oliver Picher, the company's manager of press relations.

Picher added that Unisys patented LZW in 1984, and it has been "entirely clear" that the company holds the patent and has been enforcing it. The patent has been challenged but was upheld in January 1994.

"We didn't realize that GIF used the LZW method until [January 1993]," said Picher. "We began negotiations with [CompuServe] immediately." Those negotiations were concluded in June 1994 and led to an announcement by CompuServe at the end of 1994.

CompuServe introduced GIF in May 1987, according to Tim Oren, the company's vice-president of future technology, unaware that the format's compression scheme—LZW—was not public domain.

Maurice Hamoy, vice president of business development for Inset Systems Inc., said he and others in the industry knew that the LZW scheme was part of GIF in 1991. "Most of the companies came to the conclusion that they would wait and see if Unisys would actually come after anybody," he said.

Alternatives to GIF are being proposed on the Net, and some people believe GIF will be replaced by the JPEG format, although JPEG's compression is "lossy," meaning some data is lost in the process. Another potential new format is GIF24, a 24-bit lossless standard that CompuServe hopes to develop this year. Besides offering higher resolution (16.8 million colors vs. 256 colors in today's GIF), GIF24 will be a free and open technology, according to Reid.

"CompuServe is very committed to the GIF standard," Reid maintained. But he did add that in light of Unisys's patent he would not be surprised to see someone come up with a work-around. "We have absolutely no problem with that."



Microsoft Embraces the Net

Buys Stake in UUnet, Licenses Spyglass Mosaic

Microsoft announced that the Microsoft Network (code-named Marvel) will offer full Internet connectivity by the end of the year. The software giant has purchased a minority stake in UUnet Technologies, which runs AlterNet, the nation's largest Internet access provider. UUnet will provide nationwide dial-up access to the network.

Microsoft also has licensed Spyglass Mosaic, a commercial version of Mosaic developed by Savoy, Ill.-based Spyglass through an agreement with NCSA. Microsoft plans to enhance the Spyglass software. "There's a lot

we can do with software to make the user interface friendlier and a lot we can do to make it very easy for people to find what they're interested in," said Microsoft chairman Bill Gates.

Gates added that although the Internet was an important aspect of Microsoft Network, the company plans to offer services from thousands of information providers to its customers. The service is scheduled to debut in August with the launch of Windows 95. Full Internet connectivity is slated to follow within several months.

A Web Server for DOS

PC users running DOS who want to set up a server on the World-Wide Web don't need to run Windows. They can now turn to Cykic Software's Hype-It 1000—Web server software that supports up to 30 simultaneous users on a DOS-based computer.

The \$549 Hype-It includes an HTML editor and forms support (so users can collect information from visitors to their pages). It also maintains databases of e-mail messages, user addresses, and system usage. For more information, write to cykic@cykic.com or call (619) 297-0812.

Investing Online

If you have graphical World-Wide Web access, you can now do your investing online through PAWWS. From the site at <http://pawws.secapl.com> (a secure server resides at <https://pawws.secapl.com>), you can handle every aspect of your investment from research to entering trade orders.

Reports and graphs are available to make decisions and track investments, and you can enter your existing portfolio information into the PAWWS accounting system. To open an account, choose Commercial Services from the home page and fill out the form. The service costs \$8.95 per month, \$25 per quarter, or \$95 per year; PAWWS accepts Visa and MasterCard or will bill you.



Free Art

Because they believe that music, art, and literature have become "vacuous and disposable," the people at Artists for Revolution through Technology have created the Internet Arts Museum for free (IAMfree). On the World-Wide Web at <http://www.artnet.org/iamfree>, IAMfree includes exhibitions of photos, literature, music, and other forms of art. You must have a graphical Web browser to explore the site.

ET CETERA



More Online Jobs

Yet another job-search tool has opened on the World-Wide Web, this one from NCS Jobline. Career Magazine is billed as a comprehensive online career resource for both job seekers and human resource professionals. Accessible at <http://www.careermag.com/careermag>, it can be viewed either with or without graphics.

The site contains indexed lists of job openings from the misc.jobs.offered and misc.jobs.contract newsgroups, profiles of companies seeking employees, and the Jobnet Forum, an interactive discussion group for job seekers and human resource professionals. There are also some news stories related to job hunting and a section of classified ads. For more information, write to ncs@jobline.com or call (303) 440-5110.

A Wetlands Inventory

The U.S. Government's National Wetlands Inventory (NWI) makes a variety of wetlands-related information available through the Internet. The NWI produces hard-copy and digital versions of wetlands and deep-water habitat maps. You'll find more than 14,000 digital map files via FTP at [enterprise.nwi.fws.gov](ftp://enterprise.nwi.fws.gov) in the [dlgdata](ftp://enterprise.nwi.fws.gov/dlgdata) directory.

The NWI also has a World-Wide Web server at <http://www.wi.fws.gov>. For more information, send e-mail to herman@enterprise.nwi.fws.gov or call (813) 570-5400.

The news can also be seen online on MecklerWeb at <http://www.mecklerweb.com>.



One Solution

To provide an all-in-one connectivity solution, Global Village Communication has introduced OneWorld Internet (OWI), a hardware, software, and Internet provider combination designed for small- to medium-sized businesses. Working with an organization's existing QuickMail or Microsoft Mail LAN e-mail software, OWI allows network administrators to set up an e-mail gateway to the Internet through OWI's dial-on-demand router and either a 28.8-Kbps

modem or ISDN connection. Messages are sent to Global Village's GlobalCenter service and then onto the Internet.

Administrators also can install GlobalCenter software on individual users' computers, giving them direct access to the Internet through that same 28.8-Kbps or ISDN line. Global Village provides domain-name service, allowing a company to



register as "company.com."

OneWorld Internet will be priced at less than \$2,000. For more information, send e-mail to sales@globalvillag.com or call (800) 736-4821.

Safer Web Commerce

Terisa Systems, a joint venture between RSA Data Security and Enterprise Integration Technologies, has announced SecureWeb, World-Wide Web client and server toolkits that use Terisa Systems' Secure HTTP for conducting secure transactions on the Internet.

The toolkits allow developers to design Web clients and servers incorporating a variety of encryption technologies. Thus, sensitive information such as credit-card numbers or project bids remain secure. Digital signatures

(which help ensure the identities of people involved in transactions) also are supported.

The client toolkit, which will be used by Spry in its Air Mosaic product, is available in Windows, Power Macintosh, and Unix versions. The server toolkit is available for Unix systems. SecureWeb is priced at \$3,000 plus a run-time license fee that is volume-based.

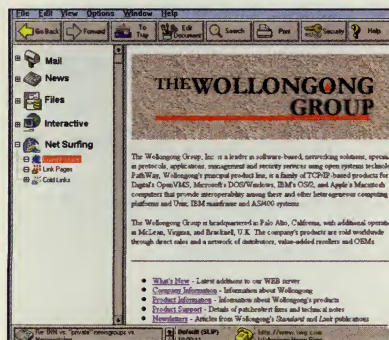
For more information, send e-mail to info@terisa.com or call (415) 617-1836.

Hit the Highway with Roadrunner

Roadrunner. The product combines e-mail, newsreader, FTP, Gopher, and World-Wide Web software into a single interface and uses a split-screen motif, with the list of applications in a narrow column on the left and the viewing window on the right. You can switch seamlessly between various applications by clicking on them. Be-

cause Roadrunner is OLE 2.0-compatible, you can imbed files from one application into other applications—a Web page in an e-mail message, for example.

Pricing for Roadrunner has not been announced. For more information, send e-mail to sales@twg.com or access the company's Web page at <http://www.twg.com>.



Joining the ranks of the all-in-one Internet tools is the Wollongong Group's Internet

ET CETERA

New MacWeb Is Faster, More Powerful

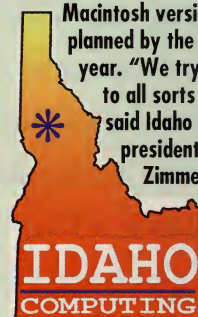
A new release of EInet's MacWeb browser, version 1.00Alpha3, offers users more options and better connectivity, according to the company. Besides a native PowerMac version, the upgrade provides CERN authentication and a host of new bookmark features. It is available via FTP at <ftp.einet.net/einet/mac/macweb/as/macweb.latest.sea.hqx>.

Making Scents

Idaho Computing (Orofino, Idaho) has taken multimedia one step further with the introduction of the ScentMaster, a PC add-in board that uses chemicals to generate scents. Referred to by the company as the first olfactory or "olaf" board, the \$199 ScentMaster consists of a 16-bit board, three external chemical vials, and a small spray-emitter module. The chemicals last up to six months and refills are \$5.99 each.

The scent board functions much like a sound card, interpreting files with an OLF extension. Instead of playing sounds, however, the ScentMaster mixes three chemicals (primary scents) to produce the desired effect. Users can choose from 36 included smells such as "roses," "new car," "roasted coffee," and "dead animal in wall."

Additional scent software and a Macintosh version are planned by the end of the year. "We try to appeal to all sorts of tastes," said Idaho Computing president Jennifer Zimmer. For more information, send e-mail to idahoc@netaxis.com.



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Circle Number 8

the Surfboard

BY ERIC BERLIN AND ANDREW KANTOR

When the going gets
tough, the tough
go surfing.



Sweet Revenge

We've all dreamed of it: Getting back at someone who's done us wrong. Now there's a place on the Net where you can get some specific suggestions for exacting your revenge. Warm up your FTP client and go to paradox1.denver.colorado.edu, then look in the /Anonymous/Textfiles/Revenge directory. It's full of methods posted to the alt.revenge newsgroup—everything from gluing your landlord's keyholes shut to ways to make smoke bombs with sugar and saltpeter.

There were more than 50 text files there last we looked, but considering the human condition it's likely to grow. If you snag any of the files, remember: He who lives by the potato in the exhaust pipe will die by the potato in the exhaust pipe.

To Tell the Truth

Truth or Dare may harken back to a slumber party hosted by 14-year old girls, but the Internet version is strictly adult territory. Located on the IRC channel #truthdare, it's essentially a group of folks getting to know each other *real* well. The game works in a round-robin fashion: The last player who answers a question gets to choose the next victim.

The surprise is that not all of the questions are as spicy as you might imagine. Yes, the word "virginity" pops up a fair number of times, but many players seem to be genuinely interested in one another, and oftentimes the questions lead to truly revelatory—sometimes even touching—answers.

Of course, if you don't want to reveal anything . . . well, secretive people probably shouldn't be on #truthdare in the first place. But if you get a sudden attack of cold feet, you can always opt for a dare. (Dares, rarely taken, are greeted with much excitement.)

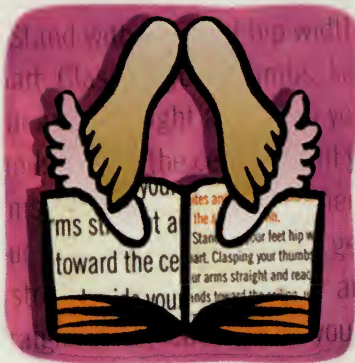
Dares can either be "real-life," in which case the players take your word that the dare was fulfilled. Or a "net-dare" can be issued: Perhaps you'd be sent to the #limbaugh channel to take an extremely left-wing stand on something, or be sent to a busy channel to type in all caps. You get the idea.

Clearly you stand less of a risk of making an electronic fool of yourself by swearing to tell the truth, the whole truth, and nothing but the truth.

Up, Up, and Away

Sex life got you down? Fear not—we at the Surfboard have the solution. The Fiore Report, an electronic publication from the people at September Products, is a monthly e-mail list written by Tony Fiore, a professional psychologist and sex therapist. According to Fiore, the reports will help "enhance relationships and improve sexuality." What more can you ask for from a mailing list?

The first issue of the Report was titled "How to Stay Sexy the Rest of Your Life"; the second issue, which came out in early January, was called: "Good Sex Is Good for You." More hot topics are sure to come. To join, send a message to sept4yu@ix.netcom.com and tell 'em you want to subscribe.



Dog Days

Monique Akar evidently loves dogs—all 156 breeds of them. She's been doing drawings of them for the past 15 years. As you'll soon discover if you take a quick glance through the Web page



devoted to Imagemaker's Gifts for Dog Lovers, she's been putting those drawings on any solid surface she can get a hold of.

The Web catalog at <http://www.onramp.net/imagemaker> is replete with doggie-embossed items: quilts, postcards, boxer shorts (ha! get it?), lampshades, umbrellas, wine corks, tape dispensers, napkin rings—you get the picture. Funny, we thought it was *cat* lovers who go over the top like this. Anyway, pass the schnauzer salt shaker.



It Keeps Going . . .

No, not the Energizer Bunny, but the hypnotic designs you find in fractals, the name given to those gorgeous patterns which spiral downwards towards infinity. Now Art Baker has made over 500 fractal images available on his Web page at <http://www.rain.org/~ayb>.

You can view them on-screen (just click on the thumbnail of the picture you want to see) or download your favorites and print them out. Baker's page will link you to other fractal-intensive sites as well, including several databases, the Interactive Fractal Server, and the Fractal Microscope, both of which let you zoom in on fractals. And Baker has put up a picture of his dog Joj. What more could you need? (Hey, Art, is that pronounced "Jahj?")

However it's pronounced, Baker's pages are an easy way to dazzle your senses—second only to taking a deep breath at a Grateful Dead concert.

Blinding Me with Scientology

Ever since the CancelMoose first appeared, people have wondered how long it would be before someone's messages were canceled simply because someone else disagreed with them. Not long. The newsgroup **alt.religion.scientology** (a.r.s.) has always been argumentative, but now things are getting ugly. An anonymous user posted a large number of documents, supposedly high-level church secrets. (They contained some cryptic exercises about observing people and "spotting things that are not wrong with them," and some of it seems taken straight from L. Ron Hubbard's science fiction, particularly the stuff about Xenu, the head of the Galactic Federation, who brought people to Earth millions of years ago.)

The whole thing may well have been dismissed as a hoax except that the anonymous posts were canceled by an equally anonymous user, using technology similar to the Cancelmoose's.

Scientologists claim that the trade secrets are copyrighted and, thus, illegal to post. Some opponents to Scientology counterclaim that the secrets aren't secret at all because they already have been used as evidence in several court cases against the Church.

According to Helena Kobrin, legal counsel for the Church of Scientology (CoS) International, the CoS considers the newsgroup guilty of "the repeated postings of copyrighted Church materials,"

which is in violation of its property rights. The Church has approached the known posters several times, she said, but they haven't stopped.

Because of that, Kobrin said that the CoS has been "compelled to request cancellation of the newsgroup as a possible method of preventing



such postings." Kobrin also claims that because Scientology is a registered trademark, its use in the newsgroup name is a trademark violation. (What does this mean, we wonder, for **comp.sys.ibm.ps2** and **alt.comics.batman?**)

And the Church didn't stop there. Evidently one Scientologist went so far as to try to remove **alt.religion.scientology** from the entire Usenet. When that didn't work, Kobrin posted a message to **alt.config** claiming that the Scientology newsgroup was invalid for a number of reasons and should thus be removed.

In a note to us she wrote: "Our request is not made for the purpose of stopping the discussions on a.r.s. We are trying to deal with an anarchy created by some net users who trample on intellectual property rights . . . under the guise of the First Amendment. If anyone has other viable solutions for eliminating the violations of property rights, we'd be interested to know what they are."

But Scientology sure isn't helping its cause if it's behind the forged cancels of Usenet posts. And the Church might also learn one fact of Usenet life: If there's a topic that people want to discuss, they're going to discuss it, and no amount of electronic wrangling is going to change that fact.

Top Ten, Take Two

You're not going to catch us saying that David Letterman's daily Top Ten list is available via e-mail. No sir. We did that once before and almost immediately the mailing list vanished without a trace,



leaving behind three zillion concerned readers, almost all of whom wrote to us.

So, no, the Top Ten mailing list has not returned, you can't get it, don't even bother trying. However, something which looks an awful lot *like* the Top Ten list is now available, and you can have it mailed to you each and every day by sending **subscribe top-ten Your Name** in the message body to **listserv@clark.net**.

Hopefully this one will stick around for a while. Although if it doesn't, we're sure you'll let us know.

Surfboard Online

You can read the Surfboard online on the *Internet World* site on MecklerWeb. Check it out at <http://www.mecklerweb.com/mags/is/v6n4/surf.htm>.



.sig of the Month

Our award this month goes to **rogue@ccs.neu.edu** ("Rogue Agent" at Northeastern University's College of Computer Science). It reads:

The NSA is now funding research not only in cryptography, but in all areas of advanced mathematics. If you'd like a circular describing these new research opportunities, just pick up your phone, call your mother, and ask for one.

State of Mind

From Phoenix (Arizona) all the way to Tacoma (Washington), if there's a city or state on the Web, you're likely to find it on USA CityLink. Nestled at <http://www.neosoft.com/citylink>, Neosoft's project is designed to "feature America to Internet users around the world."

CityLink has 51 links—all the states, plus the District of Columbia, but North Dakota and West Virginia are empty (we've always suspected as much). The other links connect to various resources (such as where to stay and eat) in cities from Huntsville and Mobile, Ala., to Cody, Wyo., (coming soon).

There's everything from the Wichita, Kan., Area Chamber of Commerce to a clickable map of Vermont and New Hampshire (is there a difference?). California's link features an explanation of the Richter Scale, and New York's has a guide to treating gunshot wounds. (All right, April Fools.) Regardless, CityLink is an easy and cheap way to see the states.



Get in Touch

Found a cool site on the Net, or maybe a hot controversy? Tell us about it.

If it's fun and funky, controversial or just plain interesting, we want to know about it. Drop us a note at surf@mecklermedia.com, or send a carrier pigeon to Surfboard, 20 Ketchum St., Westport, CT 06880. We'll check it out. ■

Eric Berlin (eric@panix.com) is a New York-based freelance writer and playwright, author of "The Line That's Picked Up 1,000 Babes and How it Can Work for You." Andrew Kantor (ak@mecklermedia.com) spends his days as associate editor of Internet World. We don't know what he does after hours.

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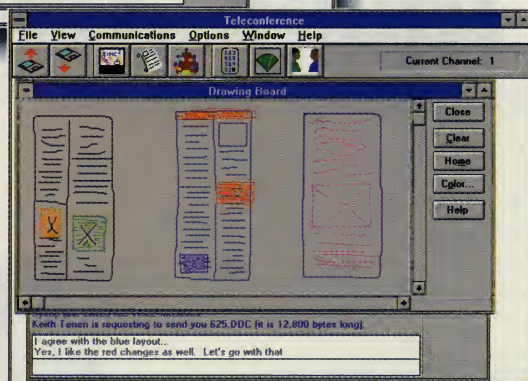
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Home Sweet Home Page

By Andrew Kantor

When you start your World-Wide Web browser—whether it's Lynx, Mosaic, Netscape, or another brand—chances are the first place it takes you is someone else's home page. Lynx defaults to the University of Kansas, for instance, while Netscape will bring you to Netscape Communications Corp.'s home page. The standard Web browser (good ol' **www** at the Unix prompt) starts you off at CERN in Switzerland.

But with these you're relying on someone else to design your starting point. Wouldn't it be nice if that starting point was full of your favorite links and the text and graphics you wanted to see every day?

Well it can be, and it's pretty easy to do. Just create a Web page to your liking—including the text you want, links to your favorite sites, and even pictures (if your browser supports them). You can put it on your computer and tell your Web browser to start there instead of in Kansas or Europe. No one else will ever see it, but it can make your surfing life a little easier.

Make the Page

World-Wide Web files are written in HTML—Hypertext Markup Language. It may sound complex, but it isn't. HTML is plain text, and you can edit it with any text editor like Windows' Notepad or the Mac's TeachText. It consists of words with *tags* around them that tell your browser how to display the words. A line of HTML looks like this: **<H1>Home Sweet Home</H1>**.

That tells your browser to display the words "Home Sweet Home" as the largest possible headline, H1. (You can have six levels of headlines; H1 is the largest and H6 the smallest.) Tags are always within angle brackets, and a tag ends with a slash in front

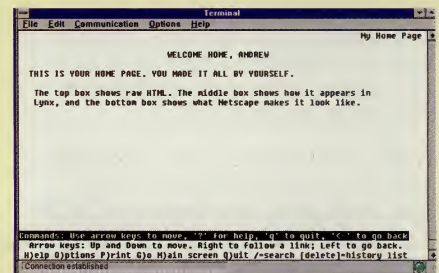
of it, like **</H1>** in the example above. There are a lot of tags you can use. (See "Basic Tags" below and check out the HTML primer at <http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html>.)

So if you created a text file called

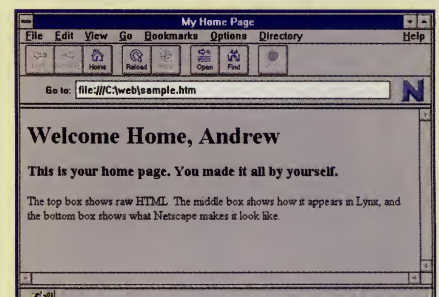
PERSPECTIVE IS EVERYTHING

```
<TITLE>My Home Page</TITLE>
<H1>Welcome Home, Andrew</H1>
<H3>This is your home page. You made it all
by yourself.</H3>
```

The top box shows raw HTML. The middle box shows how it appears in Lynx, and the bottom box shows what Netscape makes it look like.



Lynx uses bold and uppercase text for emphasis, but the content's the same.



Multiple fonts make a Web page look good in a graphical browser.

You can arrange the furnishings on your home page to make life on the Web easier.



test.html (or test.htm, for DOS/Windows people) that looked like the box “A Sample Startup Page” below, you could point your Web browser to it, just as you would point it to any other HTTP address.

Besides text, you can add pictures to your page, but they are only viewable with a graphical browser and must be in GIF format. Make sure you put the GIF file in the same directory or folder as the test.htm file.

Let's say the picture is called spider.gif and, if you're a DOS/Windows user, it's in your c:\web directory. To have it appear on the page you would do this: ``.

The line `` inserts the picture there instead of just the text. It can be any picture that you want to see every day—perhaps a photo of your dog, girlfriend, or Mom. Just remember that you'll have to update the path of the graphic if you ever move it to another directory.

Add the Links

The beauty of the Web isn't just that it can incorporate pictures and text: It's the links that make it so popular, and it's links you want to include in your home page. To do that in HTML, use this format: `Your Text`.

Yes, it looks a little complicated, but if you look at it carefully it's straightforward. If you wanted to create a link to MecklerWeb in your page, you could do this: `A great place on the Web is MecklerWeb`, which would appear as:

A great place on the Web is MecklerWeb.

“MecklerWeb” is a link (it will appear in color on a graphical browser), and clicking on it and will bring you there. And that's the point of creating your home page: to put all your favorite links on one page.

Those links don't have to be plain text, either. If your browser supports graphics, you can turn a GIF file into a link by combining a link with a picture. Let's say you want the spider GIF to be a link to MecklerWeb. Use the format: ``.

You've replaced the word “MecklerWeb” with the reference to the spider.gif image. The image will appear on your home page, and clicking on it will bring you to MecklerWeb, just as clicking on the highlighted words would have.

Extra Credit

Besides text, graphics, and links, you also can add forms to your newly created home page. If you've ever seen a Web search tool such as the WebCrawler or Wandex, you've seen a form; it's a box you fill in to perform a function such as searching the Web. Most people start at their home page, then go to the page with the form and fill it out.

The Wandex search at <http://www.mit.edu:8001/cgi/wandex> is a good example. When you go there, you see a box in which you enter text. But wouldn't it be nice to have that same box right on your own home page? By including the Wandex search form's text right there, you save yourself a step.

If you go to the Wandex page, view the source of the file (it's a menu choice for Mosaic and Netscape users; Lynx users must hit the backslash). You'll see the HTML code used for the form. If you copy the exact text into the home-page file you are creating, the form will appear there.

For example, if you want to build in a Wandex search, add the following text: `<FORM ACTION="http://www.mit.edu:8001/cgi/wandex/index">Wandex Search: <INPUT NAME="words" SIZE=42,3></FORM>`.

It will work just as if you went to the Wandex home page and used it from there. How did I know what to use? Simple: When at the Wandex home page, I selected View Source, then cut and pasted it into my page. I didn't need to know any HTML programming; someone wrote the code for me.

Get It Up

All right, now that you've learned the basic elements, it's time to put them together and design a home page that will

A SAMPLE STARTUP PAGE

```
<TITLE>Home Sweet Home Page</TITLE>
<H2>Welcome home, Andrew</H2>
<HR>
<H3>Good Spots</H3>
<A HREF="http://www.sped.ukans.edu/cgi-bin/random">A Random Page</A><P>
<A HREF="http://info.cern.ch/hypertext/DataSources/bySubject/Overview.html">The
Internet by Subject</A><P>
<A HREF="http://akebono.stanford.edu/yahoo/">Yahoo List</A><P>
<A HREF="http://www.msstate.edu/Movies/">Movie Database</A><P>
<A HREF="http://www.mecklerweb.com/mags/iw/iwhome.htm">Internet World</A>
<HR>
<H3>Search the Web</H3><P>
<A HREF="http://webcrawler.cs.washington.edu/cgi-bin/WebQuery">WebCrawler</A> <P>
<A HREF="http://www.mit.edu:8001/cgi/wandex/index">Wandex</A>
```


BASIC HTML TAGS

<code><Title>Page title</Title></code>	Page title (required)
<code><H1>Headline Level 1 Text</H1></code>	Headline (levels 1 to 6)
<code>Bold text</code>	
<code><I>Italic text</I></code>	
<code><P></code>	Inserts a paragraph break
<code><HR></code>	Inserts a horizontal rule
<code></code>	A static picture
<code>Link text</code>	A link (you see text)
<code></code>	
<code></code>	A link (you see a picture)

serve as your customized, personal starting point for Web exploration.

First, create a directory for all your World-Wide Web stuff (c:/web, for example). Second, gather a list of your Web pages—places you visit time and again and those you want to be able to access right away, like a link to the Internet Mall or the Yahoo list. Third, if you want pictures to go with them, collect the GIF files and put them into your Web directory.

It's now time to create your page. Start Windows' Notepad (or the Mac's TeachText) and create a file called **myhome.htm** (or **myhome.html**, if you're on a

Mac) in your /web directory. Every page needs a title, so start with this text: **< T I T L E > Home, Sweet Home Page</TITLE>**.

Under that, put the text you want at the top of your page, using a large headline style: **<H1> Welcome Home, Andrew</H1>**, for instance. If there's a picture you want to see every time you start your browser, add that *before* that text using ****

Then add the desired links, say **<A HREF "http://www.msstate.edu/Movies/">Movie Database**. (If you're using a graphical browser, you can substitute a picture for "Movie Database" by substituting **** for the words.)

Add in all the text, pictures, and links you want (see "A Sample Startup Page" for a suggestion), then save the file.

If you're using a graphical browser like Netscape or Mosaic, start it, then

change the default home page. In Mosaic, you'll need to edit a line in the INI file. With Netscape, you choose the Options menu, then Preferences, then select Styles from the drop-down box. There you'll see a place to enter your default home page.

In either case, make your home page file: **file:///c:/web/myhome.html**. (Note the *three* slashes before the file path and name.) Macintosh users should call it **file:///harddrive/web/myhome.html**, where *harddrive* is the name of your hard drive, and slashes—not backslashes—separate folders and subfolders.

If you're using Lynx or another Unix text-based browser, you first have to upload the **myhome.htm** file to your Unix system and rename it with an **.html** extension. Then when you start Lynx with the command **lynx myhome.html**, you'll be on the home page you created.

Chances are, your custom page won't work the way you want it to right away. But with a little tweaking and the occasional trip to NCSA's HTML Primer, you'll start every Web trip on the right foot—and on the right page. ■

Andrew Kantor (ak@mecklermedia.com) is associate editor of Internet World.

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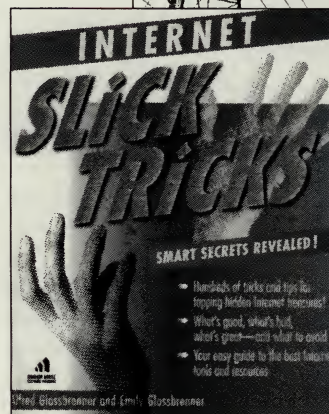
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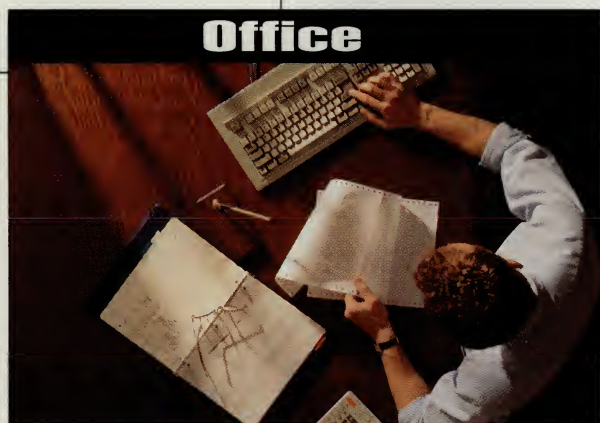
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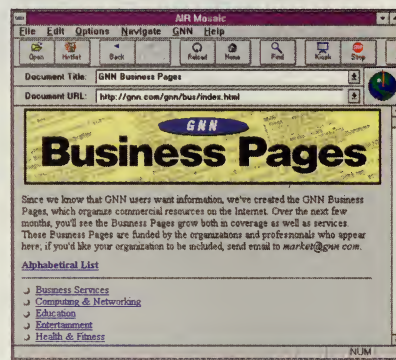
PC Magazine, October 11th, 1994

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Anatomy of the World-Wide Web

By Eric Richard

▼
Three basic technologies underlie the magic of the World-Wide Web.

The World-Wide Web's (WWW) initial goal was to provide a single, unified means of accessing hypermedia documents from anywhere on the Internet. The development of NCSA Mosaic successfully captured the WWW's power in a seamless interface that hid much of its inherent complexity. While this interface made accessing sites throughout the world as simple as point and click, understanding the Web's fundamental technology can help you to appreciate the elegance of browsers like Mosaic and to better exploit the WWW's functionality.

The Web vs. the Internet

With the recent torrent of Internet- and WWW-related media coverage, a common error is considering the Web and the Internet to be synonymous. In actuality, the Web is a collection of protocols and standards used to access the information available on the Internet. On the other hand, the Internet is the physical medium used to transport the data. The World-Wide Web defines and unifies the "languages" used to retrieve the data available on the Internet.

The Web is primarily defined by three standards: URLs (Uniform Resource Locators), HTTP (Hypertext Transfer Protocol), and HTML (Hypertext Markup Language). These standards are used by WWW servers and clients to provide a simple mechanism for locating, accessing, and displaying information available through other common network protocols (such as FTP,

Gopher, and telnet). However, HTTP serves as the primary protocol used to retrieve information via the Web.

While other standards, including Gopher, have attempted to integrate multiple protocols into a single interface, four factors combined to create the tremendous success of the Web:

- *Critical Mass.* At the time the WWW was developed, enough people were using the Internet that it could be used as a general information distribution medium.
- *NCSA Mosaic.* Mosaic's ease and flexibility of use substantially contributed to the popularity of the Web. While the functionality achieved by Mosaic was not fundamentally different from that of other applications already available, Mosaic's attractive interface quickly established a devoted user-base. In addition, Mosaic's cross-platform availability gave users on Unix, Windows, and Mac machines Web access.
- *General User Knowledge.* Internet users had become familiar enough with distributed information systems that they were no longer intimidated by the complexity of such a system. The Web was an idea whose time had come.
- *Hypermedia.* The WWW's seamless integration of linked graphics, audio, and video made creating Web sites and accessing the Web both fun and interesting.

Uniform Resource Locators

URLs provide a standard means of consistently locating Internet documents. They allow a simple addressing scheme that unifies a wide

variety of disparate protocols: URLs can specify FTP file retrieval, find newsgroups and Gopher menus, define user e-mail addresses, and identify HTTP documents.

While the format of a URL is protocol-dependent—for example, the format of a **mailto** URL is very different from that of an **http** URL—the majority of the URLs are similar to the format used by HTTP, Gopher, and FTP. These URLs specify the three pieces of information necessary to retrieve a document—the protocol to be used, the server and port to which to connect, and the file path to retrieve. While the FTP URL can be used to specify additional information, the typical format of these URLs is **protocol://server-name:port/path**. For each protocol some of these fields can be omitted.

To avoid common mistakes, keep in mind the following hints when using URLs:

- The string identifying the protocol should never be capitalized. For example, the URL for the HTTP protocol should always begin with **http://** not **HTTP://**. Some clients, such as Netscape, can handle this error, while others, like Lynx and NCSA Mosaic, cannot.
- The server name is case-insensitive. Therefore, you can use the host name **WWW.W3.ORG** or **www.w3.org**.
- The server name can be a host name or an IP Address. However, the use of IP addresses is discouraged because it makes the address less flexible.
- The port number and its preceding colon can be omitted for any of these protocols. If the port number is not present, the default port for the given protocol will be used.
- While the specifications permit the trailing slash to be omitted if no path is specified, it is generally good practice to leave the slash. For example, use **http://www.netgen.com/** instead of **http://www.netgen.com**.
- URLs also have a number of characters that they consider special and that must be handled differently. The special characters include spaces, tabs, carriage returns, the number sign (#), and the question mark (?). These characters are

represented by a percent sign (%) followed by the character's hexadecimal ASCII value. For example, a space (hexadecimal ASCII 20) would be represented as **%20**.

Every time a Web client is asked to follow a link, it breaks the URL into its constituent parts and uses the protocol section to determine how to proceed.

Hypertext Transfer Protocol

HTTP is the primary protocol used to distribute information within the World-Wide Web. It is a relatively simple, highly flexi-

uses state), you can change the directory in which you are working.

The server remembers your current directory and will use that information when it gets your next request. In HTTP, this is not possible because the protocol will not remember information from a previous connection.

State can be maintained “outside” of the protocol. Many Web sites encode information in the URL or in hidden forms fields that is used to maintain state. In addition, CGI (Common Gateway Interface) scripts can be used to modify files or databases that save the user's state.

HTTP is also a “connectionless” protocol—limited to one request per connection. Unlike other protocols, such as FTP, the connection between server and client is broken after each request is made. This means that every time a client wants to fetch a document, it establishes a new connection to the HTTP server.

This is one of the main reasons why it takes so long to load HTML pages with many inline graphics. For each graphic, a separate connection is established and information is requested. While establishing a connection

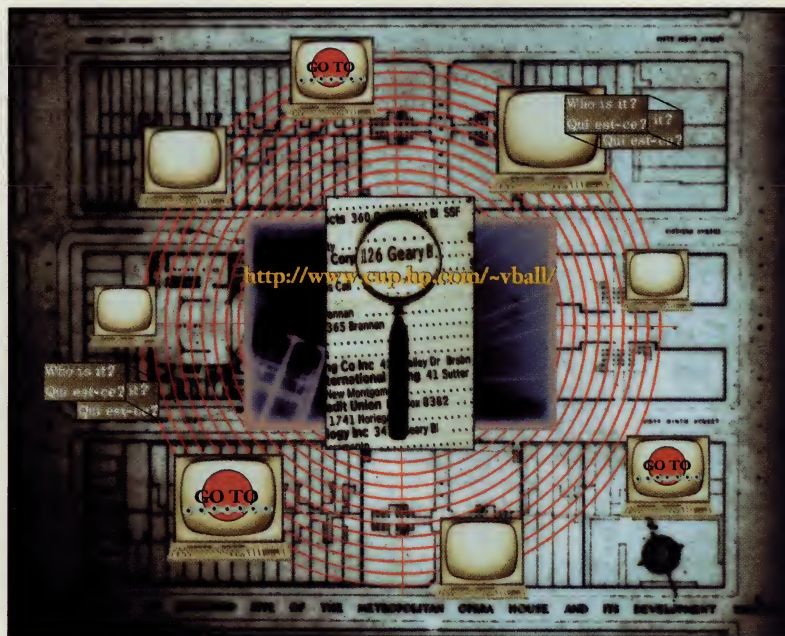
is not generally time consuming, it can seriously affect performance for distant or heavily loaded sites.

Some clients, like NCSA Mosaic, wait until a connection is closed before they open their next connection. However, many newer clients, such as Netscape, open multiple connections and receive documents in parallel. Unless bandwidth is the bottleneck in retrieving documents, this behavior results in a significant time savings when accessing sites loaded with inline images.

Client-Server Communications

The simplicity of HTTP helps speed things along. When a client connects to an HTTP server, the only information the client must send is the path information from the URL and the request method to be used.

While the HTTP specifications define several request methods, only three are commonly used: GET, HEAD, and POST. Each of these allows a client to



ble protocol used to deliver information across the Internet. HTTP defines a simple transaction, consisting of the following four parts, to deliver requested information from a server to a client:

- The client must first establish a connection to the server.
- The client then issues a request to the server specifying a particular document to be retrieved.
- The server sends a response containing a status code and the text of the document if it is available.
- Either the client or the server then disconnects.

One main goal of HTTP was to provide a simple algorithm that would enable fast response times. To achieve this goal, HTTP was defined as being a “stateless” protocol—one that does not retain any information about a connection from request to request. For example, in FTP (a protocol which

communicate a different class of messages to the HTTP server. Because of this, HTTP servers can be small, simple programs.

The GET method is used to ask the HTTP server for a specific document. Each time a user follows a link in a Web browser, GET is being used to retrieve the appropriate document.

The HEAD method is used to ask the HTTP server only for information about the document, not the document itself. This is a much quicker request because the entire document does not need to be transferred. The HEAD request is often used by clients who use caching to retrieve the document's "Last-Modified-Date" without retrieving the complete document.

The POST method is used to transfer data from the client to the server. The most common usage of POST is to submit the contents of an HTML form to an HTTP server for processing.

In addition to the path and method, HTTP clients can send other pieces of information to help the HTTP server fill the request. While these pieces of information are all optional, they can often prove very useful for the server. Some Web clients—including MacMosaic, Netscape, and Lynx—use the optional "From:" request field to identify the user of the client to the user. This information can provide a weak means of authentication and can be implemented for user-logging purposes.

Lynx, Netscape, and some versions of Mosaic are also beginning to use the "Referer:" field to identify the document containing the link that was followed. This field can be logged to determine how many sites have links to a particular page. This can provide useful information to server administrators or advertisers who want to know how users are connecting to their site.

Other optional request fields allow the client to specify the preferred languages for the response or the accepted formats for the response. While these fields are rarely used, they provide a powerful means of requesting particular types of information, when available.

Flexibility was the second goal behind HTTP's design. This was primarily achieved through the wide range of responses allowed by the HTTP server.

The first portion of the HTTP response contains a status code that indicates whether the request was successful or not. Typical error codes

indicate that the requested file was not found, that the request was malformed, or that authentication is required to access the file.

The second portion of the response contains information about the object being returned. These fields can specify the content type (whether the data is an HTML file, graphic, executable, or in some other format), the last modified time for the file, the language in which the document is written, or the date after which the information in the document ceases to be valid.

Many of these fields can provide useful information for a client. For example, the "Content Type" field is used by browsers to know how to deal with the data. The client uses this information to determine how to handle a video file or an inline graphic. The "Last Modified" field is useful for clients that eliminate unnecessary transfers by using caching.

The final portion of the response contains the object itself. Because HTTP is liberal about sending documents of any format, it is ideal for transmitting multimedia such as graphics, audio, and video files. This complete freedom to transmit data of any format is one of the most significant advantages of HTTP and the Web.

HTML

Hypertext Markup Language, a language derived from SGML (Standard Generalized Markup Language), is the final major innovation associated with the World-Wide Web. HTML is similar to many other markup languages such as LaTeX, RTF, and Frame. Markup languages define areas of text by "tagging" them with a specific format. The tags determine how the text should be rendered for the user.

Additionally, HTML provides the capability to create hypertext links between documents or pieces of documents. These links are used to represent the relationships between documents. Using hypertext links, a user writing on a topic could mark a piece of text as being linked to another document on a related topic. Using this paradigm, a user can follow the links to arbitrary depths, continually following links from one topic to another. The links are the threads of information that form the structure of the World-Wide Web.

One important part of the definition of HTML is that the tags are defined

functionally, not visually. For example, the **<H1>** tag is defined as a first-level header. However, there is no specification as to how the element should be rendered. While both Mosaic and Netscape render an H1 element in a large, bold font, WinWeb underlines the text as well, and Lynx centers the text and capitalizes all the letters. Similarly, the HTML emphasize (****) and strong (****) tags are preferred over italics (**<I>**) and bold (****) tags because they stress the functional nature of the tag, as opposed to the rendering.

The widely implemented HTML 2.0 specifications (written by Berners-Lee, Connolly, and Muldrow) defined three levels of support that browsers could meet. Each level of specification requires that certain features be provided. HTML 0.9 specifies that a browser must only support links, blocks like **<H1>**, **<HR>**, **
, and **<P> lists, and special characters. HTML 1.0 browsers must also support highlighting—****, ****, ****, etc.—and inline images. HTML 2.0 is defined to include forms support.

HTML 3.0—also known as HTML+—was developed as a set of extensions to HTML. It provides mechanisms to flow text around inline images, display tables, and make mathematical formulas. HTML 3.0 defines new highlighting elements to allow for strike-through text, subscripts, and superscripts and also defines new elements used to create footnotes and abstracts.

At press time, both HTML 2.0 and HTML 3.0 were in the development process. HTML 2.0 is set to become a standard relatively soon. (See Entry Level, p. 22, for more on tags and check out The CyberWeb: Resources for WWW Developers at <http://www.charm.net/~web>.)

Putting the Pieces Together

The HTML, HTTP, and URL specifications have worked in chorus to make the World-Wide Web a tremendous phenomenon. Understanding the Web requires a thorough understanding of how these components work, individually and together. Additionally, as these specifications rapidly evolve and are replaced, the advantages and compromises of the new technologies can be clearly evaluated in term of past success. ■

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WEBOLUTION

The evolution of the
revolutionary

World-Wide

Web.

BY RICHARD W. WIGGINS

The World-Wide Web is a very new thing—no more than a couple of years old. Mass interest in the Web arose only in 1993 and 1994, as word of browsing tools like Mosaic spread via computer magazines and leading newspapers like *The New York Times*. Despite the importance of Mosaic in popularizing the Web, the concept dates back several years earlier.

One of the fundamental features of the Web is its *hypertext* orientation: Web documents include links to other documents. In the Web context, these *hyperlinks* can point to information repositories located anywhere on the Internet. But hypertext did not originate with the Web by any means.


Surprisingly, the concept of systems that would allow readers to follow non-linear paths through documents dates back as far as 1945, when an engineer named Vannevar Bush proposed a sort of database machine called a memex that would allow readers to follow “trails” of information. Bush argued that the explosion of knowledge made it essential for readers to be able to follow alternative paths in their quest for information useful to them.

Computing visionary Ted Nelson is credited with creating the term “hypertext” and fleshing out its meaning. In 1981 he self-published a book called *Literary Machines* (South Bend, Ind., 1981) that described a system called Xanadu, which would allow readers to

create hypertext that would inherently consist of linked nodes.

One of the first practical applications of a hypertext system that saw massive distribution was the HyperCard package for the Macintosh. Released in 1987, it introduced many computer users to the concept of non-linear flows through databases. HyperCard had two features that enhanced its popularity: It was free and widely available because it was included with the Mac operating system. HyperCard not only provided embedded links within textual documents, it also allowed links to sounds and images. As such, it combined hypertext with multimedia. Hypertext systems with multimedia capabilities are sometimes called *hypermedia* systems—a term that now applies to the World-Wide Web.



A photograph of Phil Jackson, a man with a mustache, wearing a dark suit, white shirt, and patterned tie. He is sitting on a basketball court, leaning back with his hands clasped in his lap. He is smiling and looking towards the camera. In the background, a basketball hoop and backboard are visible. The court floor is polished wood. The text is overlaid on the image in a bold, white, sans-serif font with a black outline.

PHIL JACKSON

HAS BEEN WARPED

SINCE THE START

OF THE SEASON.



Before any
basketball coach tries
to emulate the
winning ways of

Coach Phil Jackson, they
may want to take a peek inside his computer.

If they did, they'd see that Phil can do
some pretty neat things. Like use his computer
to review video
of last night's
game against

New York. At the exact same time that he's
e-mailing a respectful appeal to the League.
Of course, being a game day, he's also, at
the same time, using a Windows™ graphics
program to jot down plays.

They might also note that Phil never has
to worry about totally losing it (his programs,
that is) if an application ever goes down. And

that Phil can get on the Internet and other
on-line services incredibly fast and easy,
so he can get up-to-the-minute stats and
injury reports.

In short, they'd see that Phil has OS/2
Warp, a new multitasking operating system
that gives DOS and Windows* programs
amazing versatility. (And anyone who's ever

seen Phil coach,
knows he likes
versatility.)

Now, just so there's no confusion,
Phil's not letting anyone take a peek inside
his computer.

OS/2 Warp is available for under \$90.
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The main architect of the World-Wide Web, Tim Berners-Lee, said he came to the idea of hypertext independently. He conceived of a personal hypertext tool in the early 1980s and implemented this tool for his own purposes (see "The Master Weaver," Oct. 1994 *IW*). In the late '80s, Berners-Lee was employed at CERN, the European Particle Physics Institute in Geneva, Switzerland, where he began to think about how a hypertext system could help the high-energy physics community at CERN and around the world better share information. In March 1989, he proposed a hypertext project to meet these needs. (See <http://www.w3.org/hypertext/WWW/History.html>).



TIM BERNERS-LEE, INVENTOR OF THE WORLD-WIDE WEB.

Berners-Lee collaborated with colleague Robert Cailliau on the early design documents. He credits Cailliau with providing essential moral support in many fruitful discussions about how a networked hypertext system should look.

In November 1990, Berners-Lee and Cailliau co-authored a design document that explained their views on hypertext. "Hypertext is a way to link and access information of various kinds as a web of nodes in which the user can browse at will," it said. "Potentially, hypertext provides a single user-interface to many large

classes of stored information such as reports, notes, databases, computer documentation and online systems help."

It also described how documents would be interwoven. "The texts are linked together in a way that one can go from one concept to another to find the information one wants. The network of links is called a web."

Even in this early design document, the authors distinguished their system from those following a hierarchical model. "The web need not be hierarchical," they wrote, "and, therefore, it is not necessary to 'climb up a tree' all the way again before you can go down to a different but related subject."

Note that these words were written a year before the University of Minnesota announced the Internet Gopher, foreshadowing many discussions about the relative merits of hypertext vs. hierarchical systems.

This 1990 document proposed other notions fundamental to the Web as we know it today:

- The ability of links to cross machine boundaries.
- A simple, common protocol for exchanging hypertext documents (a concept later embodied in the Hypertext Transfer Protocol, or HTTP).
- A common document protocol for the suppliers and consumers of information (later embodied in the Hypertext Markup Language, or HTML).
- Support for index searches.
- The widely deployed ability to view these documents via browser programs supporting at least text dissemination, if not graphics.

The term World-Wide Web was not used as a proper noun but does appear in the introduction to this document, which reads, "Having a worldwide web implies some solutions must be found for problems such as different access protocols and different node content formats."

Berners-Lee received funding to begin work on the CERN hypertext project, which included getting a NeXT workstation for development work. Although NeXT hardware never sold in large numbers, the operating system included a development environment that allowed for quick prototyping of systems. Berners-Lee had an initial prototype

working by late 1990. At the same time, Nicola Pellow joined the project and began work on a line-mode browser. By Christmas, both line-mode and NeXT browsers were functional.

Work continued on the Web project at CERN throughout 1991, with Berners-Lee and colleagues making presentations to various audiences at CERN and elsewhere. The World-Wide Web was released for use at CERN in May 1991. By August, CERN announced tools in postings to several Usenet newsgroups (**alt.hypertext**, **comp.sys.next**, **comp.text.sgml**, **comp.mail.multimedia**). And in December, Berners-Lee described the World-Wide Web at a session at the Hypertext '91 conference in San Antonio, Texas.

In January 1992, the line-mode browser was made available for anonymous FTP, and by July 1992, CERN announced a library of WWW tools. To this day, it is a vital toolkit used by developers of Web browser and server software.

As word about the new concept spread, collaborators outside of CERN began to spring up. One of the earliest full-screen browsers was Viola, developed by Pei Wei, then of the University of California at Berkeley. This tool contained many elaborate features, and Berners-Lee said it easily could have attained the important role later assumed by Mosaic if Wei had chosen to "productize" it.

Viola offered a view of HTML documents similar to that of more recent browsers. For example, hypertext links were differentiated from normal text by underscores or coloring and could be navigated via simple mouse clicks. An early Viola version was available in mid-1992. The X/Window browser was generally available in January 1993, along with another X/Window tool, called Midas, and a Mac browser developed at CERN.

Much of the development of the Web would not have been possible without worldwide discussions, carried on initially on newsgroups such as **alt.hypertext** and later on the **comp.infosystems.www** group as well as on the **www-talk@info.cern.ch** mailing list.

By early 1993, the stage was set for the masses to begin using the tool called the World-Wide Web, but the Internet Gopher seemed to be getting most of the attention. At the March 1993 meeting of the Internet Engineering Task Force, for

example, a "Birds of a Feather" session held by Berners-Lee attracted only about 10 attendees. By contrast, a Gopher session attracted more than 10 times that many participants.

At the meeting, Berners-Lee asked what barriers were inhibiting acceptance of the Web. Although his audience was small, they were sold on the Web, and they had numerous answers, including:

- It was hard to get boot strapped on the Web. Servers and browsers required some effort to install, and much of the documentation was in HTML.
- The community still needed an easy-to-install, highly functional browser for high-end workstations.
- The community also needed a good VT-100 text-mode browser. The line-mode browser was designed for use on a true "dumb terminal" and as such could not even make use of simple full-screen functions.

Berners-Lee accepted that the first point was well-taken and declared that efforts would be undertaken to simplify installation. From July 1993 until July 1994, Ari Luotonen did a great deal of work on the CERN httpd server. Others around the Net also undertook their own server efforts.

As it happens, other developers were addressing the browser issue. In February 1993, Marc Andreessen, then a student at the University of Illinois in Urbana-Champaign, Ill., home of the National Center for Supercomputing Applications, (NCSA), announced Mosaic, an X/Window Web browser. Andreessen conceived of Mosaic and developed it with Eric Bina, a programmer at NCSA.

Almost immediately Mosaic caught the attention of the Net. It was easy to install and handled not only HTTP and HTML but other protocols such as Gopher and FTP. It also was highly functional and bugs were fixed quickly. Of course, then as now, relatively few

In those days . . . we sent a note to **www-talk** and hammered out a spec.

users had Unix workstations running Motif and X/Window on their desktops, so in mid-1993 NCSA announced plans to release Mac and Windows versions of the browser. By Fall 1993, these plans had borne fruit: Windows Mosaic, written by Chris Wilson and Jon Mittelhauser, became available, as did Mosaic for

the Mac, developed by Thomas Redman, Kim Stephenson, and Mike McCool.

But Mosaic was not the only client developed in 1993. Thomas R. Bruce of Cornell University's Law School announced his Windows client, Cello, early that year. Bruce said he first heard about the Web by reading Ed Krol's *The Whole Internet User's Guide and Catalog* and in Gopher newsgroups. When he saw the CERN line-mode browser and the Viola client, he thought the Web concept was important but that a Windows browser with high levels of functionality was needed. Bruce had considerable hypertext experience and was anxious to bring the Web to his users' desktops. Cello remains popular among a number of Windows users and a newly enhanced version is in the works (see "Browser Shootout," p. 46).

Meanwhile, the VT-100 client that people at the 1993 IETF meeting had said was needed had, as it turns out,

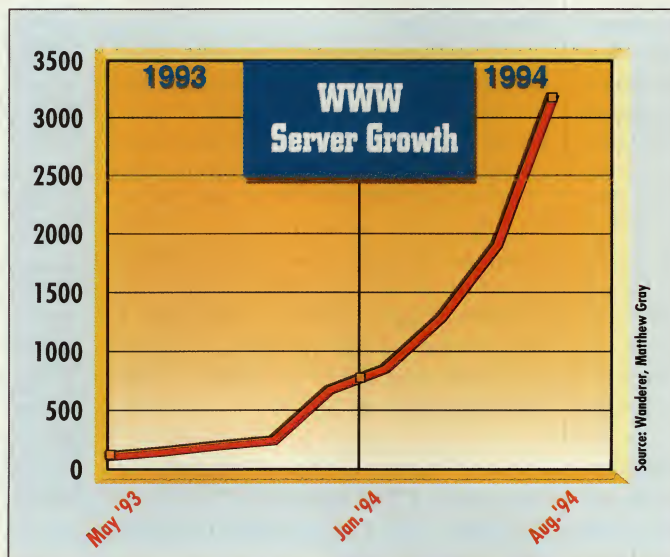
been developed in early 1992 by Lou Montulli of the University of Kansas as part of a campus-wide information system project. Originally geared towards proprietary standards, Lynx evolved to become a standard Web client. Collaborators included Charles Rezac and Michael Grobe.

During 1993, a number of Web servers became available from various sources. Rob McCool of NCSA developed a Unix httpd program that became the server of choice for many sites. McCool worked hand-in-hand with Andreessen to develop a server that could exploit new features being developed for the Mosaic client.

McCool fondly remembers those heady days when Mosaic was being developed at NCSA. "It's a very different world now than when we started," he reminisced. "I can remember the days of going into Marc's [Andreessen] cube and seeing something new every day. Marc was wide-eyed with enthusiasm as he showed me inline images for the first time, and forms. . . . In those days, if we wanted to do something new, we either just did it or we sent a note to www-talk and hammered out a spec. It was very easy and it worked."

One of the major enhancements introduced by McCool was the Common Gateway Interface (CGI), which served as a standard for how to implement advanced applications such as clickable image maps and fill-in forms. Much of the early work for such advanced features was done by Tony Sanders of Berkeley Software Design Inc.; he developed prototypes for his own Plexus server based on the Perl language. (Plexus in turn was based on an early Perl server written by Marc Van Heyningen of Indiana University.) McCool credits Sanders with much of the inspiration for how CGI evolved.

Another important early collaborator on server enhancements was Charles Henrich of Michigan State University, who developed a mechanism for the Unix server to incorporate parsed HTML features. This capability has also been important to many advanced server



functions, such as the creation of dynamic HTML documents.

But Unix was not the only server environment of choice during 1993. Chris Adie of the University of Edinburgh developed a server for the Windows NT environment, opening up the ranks of server hardware to include Intel machines running Microsoft operating systems. Chuck Shotton of the University of Texas Medical School developed a Mac server that he released in August. Potential server administrators were thrilled to see these new platforms become available.

Inspired perhaps by the model of Veronica in the Gopher world, pioneering Web enthusiasts have been developing Web catalog tools since 1993. Two of the earliest catalogs were the W3 Catalog created by Oscar Nierstrasz and JumpStation developed by Jonathon Fletcher. Tools such as these search the Web for documents whose contents are added to an index. Many of the tools exploit the forms capability of HTML for their user interfaces.

Indexing the Web is a somewhat more complicated proposition than indexing Gopher titles. Should the index search only titles of documents, embedded hot links, or full text? What should be returned to the user as selectable items? Nonetheless, many attempts at building Web indexes have been undertaken, from EINet's Galaxy project to Joel's Hierarchical Subject List to Dr. Mike Schwartz's Harvest project. Catalogs of Web documents have also been handcrafted, including the popular Yahoo system at Stanford and CERN's distributed WWW Virtual Library.

The framework for the design of the HTML specification has always been the page-description language known as SGML (Standard Generalized Markup Language). This meant that HTML was born into an existing milieu with its own community of users. Whenever HTML varied from SGML principles—for instance, whenever HTML proposals took on too many aspects of control over page layout—loud discussions ensued on various newsgroups.

Many people contributed to the standards process. Two who stand out are Dan Connolly (formerly of Convex, now of Hal Software Systems) and Dave

Ragget (of Hewlett-Packard). Connolly wrote an SGML Document Type Definition for the HTML specification, helping to create a standard for HTML to which authors could adhere.

Dave Ragget proposed extensions to HTML that are known as HTML+. Features include support for tables of data, mathematical formulae, and text to wrap around inline images.

Late in 1993, the founder of Silicon Graphics, James Clark, announced the formation of Mosaic Communications Corp., with Marc Andreessen as a partner. Later renamed Netscape Communications Corp., the company wrote a new version of Mosaic—called Netscape—from scratch.

By 1994, the number of Web browser programs had skyrocketed. NCSA announced that Spyglass, its neighbor in Savoy, Ill., would become the marketing and licensing arm for all commercial versions of the Mosaic.

While tool development is important, the explosion of Web content is an equally important part of the story. There are several thousand Web servers known to be online now, and perhaps a dozen or more new services come online daily. New services vary from artistic tours of the Louvre to White House pages, and from company information from IBM and Microsoft to real-time displays from NASA. Federal Express has even put its package-tracking database online on the Web.

Pioneering Web information providers such as Kevin Hughes (formerly of Honolulu Community College and now with CommerceNet), Michael Mealling (Georgia Tech), and Frans von Hoesel (author of the famed Web edition of the Vatican Archive) set the stage for others to follow.

Eric Bina summed it up best when he said, "The true unsung heroes here are the hundreds or even thousands of people all over the world who devoted large chunks of their time to put information content on the Web. Without them, NCSA Mosaic, Netscape, and the Web would be nothing. I saw the incredible speed at which the Web went from almost nothing to an information flood. I stand in awe of those people and all the hard work they did for no reward. They made the Web." ■

Richard Wiggins (wiggins@msu.edu) is the author of The Internet for Everyone: A Guide for Users and Providers (McGraw-Hill, 1995).

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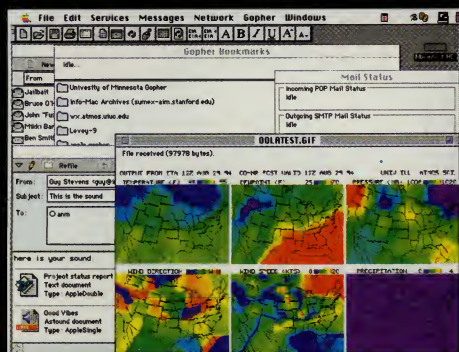


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Hop, Skip, and Jump

Navigating the World-Wide Web

BY AARON WEISS

There's an enormous supermarket in my town, the largest store of any kind in the county. My first shopping venture there is a visceral memory in which I faced a dizzying array of sights and sensations: the smell of coffee shops, breadmakers, cake bakers, and melons; day-glo signs calling attention to a horizon of display cases with six types of peppers, nine types of apples, breads, fish, and a rack of uglifruit. The public address system announced news about sales in the aisles. All the while, steel carts were racing about, lapping me as if it were the Supermarket Grand Prix. The market was alive! The fruits of humanity were before me! I let go of my cart and ran out the exit.

Some time later I was coaxed back into that madhouse and learned how to appreciate the bounty. The World-Wide Web (if you haven't guessed where I'm going with this) is quite like that fearful supermarket. It's easy to be confused and scared off by the Web's apparent mess. With magazines, Usenet, and even television throwing out new and interesting URLs to visit, your attention can be torn in many directions. You need only find the right shopping cart and floor plan to make some sensible use of the Web.

The browser is your doorway to the Web, providing the interface through

which you will traverse its wonders. Just as there are multiple models of cars, there are multiple models of Web browsers, and you need to select one that best suits your needs (for help in evaluating browsers, see "Browser Shootout," p. 46). Unlike cars, however, many browsers are free.

What your browser looks like, what features it provides, and how it works depend on what type of computer system you use to access the Web. The majority of users will be on PCs, Macs, Amigas, or Unix shell accounts on a remote computer. The optimal situation is to run a graphical browser on a machine that can communicate directly with the Internet (via TCP/IP). For home computer users, this means either SLIP or PPP access with a service provider, an ISDN connection, or for some students, an Ethernet connection within a dorm room.

Users on Unix shell accounts have two basic options. They can use either text-based browsers (no graphics) or—service-provider willing—install a pseudo-SLIP application such as The Internet Adapter (TIA) or SlipKnot, which allows you to browse graphically over a non-SLIP dial-up account (see "Browser Shootout," p. 46).

The major disadvantage of a text-based browser is that it hasn't any multimedia capabilities and, thus, loses an

attractive aspect of the World-Wide Web. The upside of a text-based browser is that it can be a fast and efficient way of getting around the Web when you're only interested in text-based information. Perhaps the most popular text-based browser is Lynx, which uses a full-screen VT-100 display. A solid and capable browser, Lynx is often installed on service providers' Unix systems as the default browser.

If not, you can find Lynx via FTP at <ftp2.cc.ukans.edu/pub/WWW/lynx>. Navigating the Web with it is relatively straightforward. Using the up and down arrow keys you move between links within a document. The left arrow key takes you to the previous document, while the right arrow key will "enter" or "follow" a highlighted link. Hitting "G" allows you to input a URL, and "H" connects you to Lynx's online help pages for further features and options.

Emacs gurus might want to look into Emacs W3-mode (<ftp://ftp.cs.indiana.edu/pub/elisp/w3>), a Web browser that runs under many Emacs implementations, including X/Windows, OS/2, Windows 3.1, and AmigaOS.

If you're unlucky enough to only have access to a dumb terminal without even VT-100 capability, you might try the Line Mode browser from CERN; <ftp.w3.org/pub/www/src>.

The real action is in crawling the Web with graphical browsers. Mosaic has nearly become synonymous with the Web, in classic Kleenex and Xerox fashion. Developed at the National Center for Supercomputing Applications (NCSA), Mosaic is destined to take on grandfatherly status. A number of good alternatives to Mosaic have been



introduced, including Book-Link, MacWeb, Netscape, and WinWeb.

Netscape (nicknamed "Mozilla") something of the app *célèbre* on the Net these days, incorporates a number of advances over Mosaic that improve performance. Essentially, Netscape behaves in a multithreaded manner, enabling you to start moving through documents while inline images are being downloaded. You also can open other Netscape windows to work with other Web pages simultaneously if a server is particularly sluggish.

In addition, Netscape provides threaded-newsreading capabilities and mailing functions. Those who prefer MacWeb or WinWeb argue that Netscape tries to do too much on its own and that standalone mailers and newsreaders in addition to the Web browser are preferable. On the flip side, MacWeb and WinWeb do not feature the multithreaded nature of Netscape, which is one of the latter's stronger points.

Amiga users haven't been left out in the cold. Based on, but not affiliated with NCSA Mosaic, AmigaMosaic ([ftp to max.physics.sunysb.edu/pub/amosaic](ftp://max.physics.sunysb.edu/pub/amosaic)) is currently the only graphical browser available for the Amiga and requires OS3.0 or higher for inline-image support (version 1.2 supports OS2.0+ without inline images). AmigaMosaic does not yet have forms support.

Navigating the Web with any of the graphical Web browsers is similar to working with other common graphical applications. A row of icons across the top of the screen provides quick access to the browser's major features, while the menu bar offers more specific options. The most basic function of any browser is opening a URL, which is how you access a Web page.

In Mosaic, you open a URL by choosing Open URL from the File menu and typing in the URL, <http://www.mecklerweb.com> for instance. In Netscape, there is an Open icon in the topmost icon bar. The left and right arrow icons in the icon bar are

used to move back to the previous page or forward to the next. The house icon will shunt you back to the Home Page, which by default is usually set to the home page of the browser you are using. The Web document is displayed as a standard window, which you can scroll through as in any application.

Some browsers display the URL of a link. In Mosaic, you can select Show Status Messages under the Options menu to enable this feature. In Netscape it is controlled by Show Location in the Options/Preferences menu. You can usually search the text within a page—for example, by using Find in Netscape and NCSA Mosaic or the Search menu option in AmigaMosaic.

Another useful feature is the ability to view a document's source HTML file. Looking at the HTML code is a brilliant aid to learning to write HTML code yourself, and it can be helpful in diagnosing problems on pages you visit. If something is not working

on the page, you can look at the source code and see what it's trying to do.

Inline images can be a blessing or a curse, depending on the speed of your Net connection. While a page full of 256-color pictures can be a pleasure to the eyes, waiting for the images to download can strain your patience. The ability to turn off automatic loading of inline images can greatly speed up page transfers.

In Netscape, for example, you can uncheck Auto Load Images under the Options menu to prevent image transfer. In all browsers, images are represented by icons. Often you can click on an icon and the browser will retrieve just that image, allowing you greater control over how much time you allot to loading a page's graphics.

To aid in keeping track of your explorations, browsers offer some sort of hotlist or bookmark feature that lets you maintain a log of places you wish to save for future visits. In Mosaic, you can select Add This Document from the Hotlist menu, and a page to which you're linked will be added to the hotlist for easy retrieval. Netscape's bookmarking feature is an advanced form of a hotlist, allowing you to create hierarchical hotlists. Although a simple concept, hotlists and bookmarks are a vitally

important way to organize the Web, at least at the local level.

One of the most common criticisms of the Internet is that it is not well-organized. Without going into the philosophical arguments of why this is wrong, suffice it to say that the Internet is not traditionally organized and the World-Wide Web inherits this disorder. A number of initiatives have been undertaken to help organize the resources on the Web in ways in which users are more accustomed. Catalogs and indexes provide one way of locating documents, and search engines offer a broader means to locate information.

The most obvious way to organize information is by subject, and more than a few sites have taken this route. One of the most comprehensive of these types of directories is the WWW Virtual Library (<http://info.cern.ch/hypertext/DataSources/bySubject/Overview.html>). This is a solid, if overwhelming, place to start looking for information. The catalog ranges from Aboriginal Studies to Cryptography, Dance, Fortune Telling, and Recipes as well as other traditional disciplines. In true Web fashion, there's even a link to a catalog of other subject catalogs.

Another good place to launch Web missions is from the EINet Galaxy (<http://www.einet.net>), which has a nice organization of subjects and some wonderful tools for searching its catalog and the greater Netspace. Its subject categories are similar to those in the WWW Virtual Library. A somewhat smaller index, but with a nice Getting Started page for newcomers, is the Planet Earth Home Page (http://white.nosc.mil/info_modern.html).

One of the more popular launch pads is Yahoo (<http://akebono.stanford.edu/yahoo>), which offers search capabilities, a What's New page, and a Top 50 page. Users can submit new sites and automated robots seek out others, making this is a good place to find new resources. Another source for up-to-date information is the Whole Internet Catalog (<http://nearnet.gnn.com/wic/newrescat.toc.html>), which has a What's New page and an uncluttered organization of topics.

If you're organized enough to desire a subject index, but not so much as to want it neat, it may be worth an hour to scan the Mother-of-all BBSs. At http://www.cs.colorado.edu/homes/mcbryan/public_html/bb/summary.html, it has a huge and untamed list of subject links.



On the other hand, with the sheer volume of data available on the Web, maybe sifting through subject indexes to locate information about your favorite obscure insect isn't such a time-saving idea. Enter Web searches. It's nice to let your computer sift through the mess for you; after all, isn't that what the beasts are for?

Be cautioned: There is no one ultimate search tool for the Web. Because of its nature, various search engines use different search techniques and yield different "views" of the Web. Depending on what techniques they use, the automated search engines are sometimes referred to as "robots," "worms," or "spiders." One of the basic decisions a search engine makes is whether to follow a *depth-first* or *breadth-first* approach.

The advantage of a depth-first search is that it is comprehensive: It starts with a given document and pursues every link in that document, cataloging what it finds. After searching every link in a document, it can then choose another document and pursue every link within that one.

In theory, this method should provide

the most accurate catalog of the Web. In practice, it has some big problems. Depth-first searches can slow servers to a crawl with their repeated requests or by following links to picture, sound, and animation files. They can also end up circling through loops of links that refer back upon previously covered tracks.

An alternative to this strategy is the breadth-first search. Rather than attempting to follow all the links in a given document, a breadth-first search focuses on cataloging a wide array of top-level Web documents.

Another search concern is what information about a Web document is worth cataloging. At most, you could retrieve the entire contents of every Web page found, although this would demand hefty storage space and yield inefficient searches. At the least, you could simply store the URL of the given page and perhaps the title.

The utility of understanding these concepts lies in your choice of what search engine to use for a particular task and what to make of the results. The most popular search engines on the Web, including

the following, employ varying mixtures of these search strategies.

JUMPSTATION II

Jumpstation II (<http://www.stir.ac.uk/jsbin/jsii>) offers a breadth catalog of Web pages with URL, title, header, and subject search categories. The search engine allows you to enter adjacent words in single-type searches but not multiple-type ones. That means you can search for all documents with the phrase "Mary Contrary" in their title, or you can search for all documents with "Mary" in the title and "Contrary" in the header, but you *cannot* search for all documents with "Mary Contrary" in the title *and* "Curds" in the header.

An interesting side-offer of Jumpstation II is the Server Scanner, which allows you to search for Web server addresses based on Unix-style wildcard entries, such as *.cornell.edu. This is a useful way to find servers for which you only remember portions of the address (You should have used a hotlist!) or to locate servers in a particular domain.

Jumpstation II is a good engine for

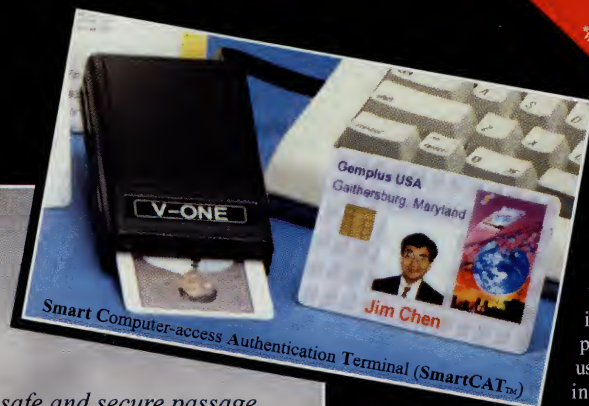
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seeking major topics, but it's not necessarily the right choice for obscure subjects. For example, in testing Jumpstation II and the following engines, I used the search term "Phish" (a reference to a semi-obscure musical band) and "Capra" (a reference to super-obscure author Fritojf Capra). Neither of these keywords yielded any matches on Jumpstation II. On the other hand, "Macintosh," not surprisingly, yielded 39 hits.

THE WEBCRAWLER

A more complex search system, the Web Crawler (<http://www.biotech.washington.edu/WebCrawler/Home.html>) uses a breadth-first strategy to explore the Web with a more depth-oriented strategy to search for a particular piece of information. Furthermore, the WebCrawler indexes the content of documents, not just URLs and titles, and also allows for adjacency searches (e.g., "Mary Contrary"). The search term "Macintosh" returned 1,763 documents, obviously a more comprehensive find than with Jumpstation II. The WebCrawler came up with 22 documents for the keyword "Phish," but only four for "Capra" and none for Fritojf Capra.

With its content-based approach, a 50MB content-database, and 40MB of known links, the WebCrawler is an excellent search tool for finding a wide range of references.

LYCOS

A third, very ambitious Web hunter is known as Lycos, and it resides at Carnegie-Mellon University (<http://lycos.cs.cmu.edu>). Lycos's search engine is an elaboration on the concepts outlined previously. It makes a weighted random choice of which links to follow in a document, biased towards documents with multiple links pointing at them (implying popularity) and links with shorter URLs, on the theory that shorter URLs tend to imply shallower Web links and, therefore, more breadth. In addition, links that point to files with common suffixes indicating that they are sound or graphics files are filtered out. Lycos not only catalogs a document's title and headings, but also the first 20 lines and the 100 most significant words, based on an algorithm.

In effect, Lycos tries to make a summary of a document to preserve its content while alleviating the inefficiency of cataloging it in its entirety. On the other hand, the Lycos search language does not yet support Boolean queries (and, or, etc.) or adjacency searches, but these capabilities

are promised.

Lycos presents two databases to search: The small catalog has 237,000 entries, while the large catalog is bursting with more than 1.2 million. It should not be surprising that a query to the large catalog using the keyword "Macintosh" scored more than 4,000 hits, making Lycos a somewhat overenthusiastic search tool for such a high-profile subject.

With a forms-supporting browser, however, you can limit the number of hits that Lycos will return, which should help ameliorate the avalanche. Lycos ferreted out 74 hits on the keyword "Phish," although many of the hits ultimately referenced the same pages. Lycos dug up 26 finds for the keyword "Capra," and, lo and behold, three of them referenced documents with content about Fritojf Capra.

WORLD-WIDE WEB WORM

The three search tools discussed above represent the spectrum of Web search engines. But they are far from being the only Web search tools. Oliver McBryan's entry into the world of Web hunting is the World-Wide Web Worm (<http://www.cs.colorado.edu/home/mcbryan/WWW.html>). The WWW, as it is affectionately known, sports a flexible search interface. Mastery of Unix regular expressions can greatly aid you in defining wildcard-based searches, but there is an excellent tutorial page that guides users through examples of how to search with the WWW engine.

The flexibility of the WWW lies in the complexity of its search language and the diversity of information for which it can scan. For example, you are not limited to subject, address, and content, but can search for content-based, URL address-based, or even filename-based (i.e., MPEG files) items.

RBSE

RBSE's URL database (<http://rbse.jsc.nasa.gov/eichmann/urlsearch.html>) is a breadth-first content-based search engine. It doesn't have nearly the comprehensive range of the Lycos engine, but RBSE offers a way to glean content from the Web without hauling down a boatload of data. It's probably best used for high-profile content searches, when you are looking for links to get you started in a subject area.



CUI W3

The CUI W3 Search Engines page (<http://cuiwww.unige.ch/meta-index.html>) is like the wholesale warehouse of Net searching. In one sprawling forms-

based document you can access a wide array of Net search facilities, from numerous Web search engines to Web catalog searches to people, FAQs, and software.

The form is subdivided into sections based on the search category, such as *list-based* and *spider-based* catalogs. List-based catalogs typically are tended by human hands—more so than spider-based catalogs—and, therefore, are more selective. But spiders tend to be more comprehensive. Not only does the CUI W3 offer a convenient way of checking into multiple search engines, it doubles as a central point for finding out about new ones, should they be added to the form.

For a more detailed article on Lycos and other new Web search engines, read John December's "New Spiders Roam the Web" at <http://www.rpi.edu/~decemj/cmc/mag/1994/sep/spiders.html>.

For more information on Web robots in general, hop over to World-Wide Web Robots, Wanderers, and Spiders at <http://web.nexor.co.uk/mak/doc/robots/robots.html>. Another helpful page of search tools resides in the Netscape Web pages at <http://home.mcom.com/home/internet-search.html>, which contain links to the above engines plus several similar projects (clicking on the Net Search button in Netscape will bring you directly to this page).

Because Web pages have a tendency to cluster related information, you often need only find a few links to a desired topic and the pages will likely lead to whatever others might be out there. On the other hand, you may need to search a million sites to find the wonderful new pottery artist whom only you and 12 other people know about.

And keep in mind, it's also not good Net karma to bog down Lycos with a search that yields 15,000 hits. ■

Aaron Weiss (mw12@crux2.cit.cornell.edu) is a freelance writer based in Ithaca, N.Y.

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Browser Shootout

We round up and rate every major Web surf tool on the planet.

BY PETER KENT

There's a lot of confusion about the World-Wide Web.

Those in the know talk about the Web as if everyone's been there, and certainly the amount of

traffic is growing rapidly. But the fact is that relatively few Internet users have visited the Web, and fewer still have seen it through a graphical browser like Netscape or the granddaddy of them all, Mosaic.

If your only contact with the Web has been through the misinformed ramblings of the mainstream press, you may be under the impression that Mosaic is the Web—that the two are synonymous. Nothing could be further from the truth.

The World-Wide Web is a giant hypertext system overlaid on the Internet—it's a collection of documents with links interwoven among them. For example, a document on a computer in New York can contain a link to one in London, which might be linked to one in Vienna, which could be linked to one in Podunk, Ark.

How do you peruse these links? You need a browser—a program that lets you view Web documents and navigate through the Web's intricate link structure.

That's where Mosaic comes in. But Mosaic is over two years old—a lifetime on the Internet. Newer products that offer easier navigation, faster processing, and a host of other features have entered the market. Many are share- or freeware, and some come bundled in suites of applications like Spy's Internet in a Box. Many browsers come in Windows and Macintosh versions, while some are only available for one platform. And one works with DOS, believe it or not. You need a SLIP, PPP, or direct connection to use most graphical browsers, but the sidebar "The Non-SLIP Connection" offers suggestions for getting around this.

For this review, we rounded up 24 Web browsers. Most are available at the time of this writing, and a few will be shipping shortly. We've limited the review to the PC and Mac platforms because they are the most widely used. You will likely find, as we did, that no one browser does it all; each has its strengths and weaknesses.

STAND-ALONE BROWSERS

These browsers come as single programs, rather than as part of other products or suites. Most are freeware, some are shareware, and a few are commercial products. They all work with TCP/IP connections, either with dial-up SLIP or PPP or through a direct line.


Air Mosaic





Originally part of Spy's Internet in a Box and Air Series products, Air Mosaic is now available as a stand-alone application: Mosaic in a Box.


Air Mosaic is a commercial modification to NCSA Mosaic, and it's a genuine improvement. It has a much enhanced hotlist system, letting you create a hierarchical system of hotlists, folders, and bookmarks, and it comes with several hotlists already set up. You can also add hotlist items to a menu with just a click on a check box, which is easier than Mosaic's system. If you've been working with Mosaic, you can even import the menus

KEY

WIN= 

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OS/2= 

DOS= 

you created as Air Mosaic hotlists.

The browser has a good history list, too, which shows URLs and document titles from previous sessions. General configuration also is easier in Air Mosaic than in NCSA Mosaic, with everything being done in dialog boxes. And Air Mosaic's kiosk mode is better: Press Ctrl-K to remove all controls, displaying the document full screen, and press it again to replace them.

One of the nicest features of Mosaic in a Box is its built-in dialer. You don't need to establish the SLIP or PPP connection first. This makes it perfect for people who are only interested in one aspect of the Internet: the Web.

Cello

Cello is a Windows browser that was—for a short while at least—NCSA Mosaic's only real competition. That's not the case anymore, and the original Cello seems to have fallen behind, although that may be remedied by version 2.0.

Cello is easier to configure than Mosaic: There's no need to mess around with the Windows INI file; it's all done within the program. And Cello has some useful features that most other browsers don't possess. Most significant, perhaps, is the ability to save HTML documents with the tags removed. Most Windows browsers only let you save documents as HTML (Mac browsers are better in this respect). Cello also lets you save the URL from a link by clicking on it with the right mouse button—you'll see a dialog box showing the URL and can copy it to the Clipboard by clicking on a button. This is a handy feature, and one that other browsers such as InternetWorks have started to include.

Cello's look and feel is clunky, and it lacks in other areas as well. The URL isn't displayed in the status line when you point at a link, there's very little on the toolbar (only a Back, Stop, and Forward button), and it's hard to load a file from your hard disk (you have to load it as the home page). Cello is useful, however, for converting an HTML file to plain text.

The upgraded Cello 2.0 is on the way. There was no copy available for this review (we were able to get a look at the screen), but a beta version should be out soon. The program has been completely rewritten and its creator—Thomas R. Bruce at the Cornell Law School—

promises a lot of new features. It will have a new non-clunky look and will let you open multiple windows (allowing you to display search results, for example, in a separate window).

Cello 2.0 will support more file formats so you won't need to configure various viewers (for GIF, JPEG, PCX, TIFF, and other formats). It will have a "trace window" that shows what's going on in the background and a right-mouse-click menu that works on links to gather information about the link or copy the linked item to a file. You'll also be able to cut and paste text and images from a document.

Expect to see improved bookmarks, easier program configuration, and an unusual table of contents feature that displays all the headers in the current document so you can jump to exactly what you need. You'll also be able to tell Cello 2.0 to get only the small inline graphics; most browsers let you turn graphics on or off—there's no in between.

Web power users should be interested in a neat trick planned for saving HTML files. If a link in the document you are saving is a relative link, Cello will convert it to an absolute link so that the link will work correctly when you use the document on your system. The addition of OLE (Object Linking and Embedding) will give you the ability to paste active links into OLE clients. There are many other features planned, and if Cello hits the Net with all these new goodies it will become a real competitor again.

DOSLynx

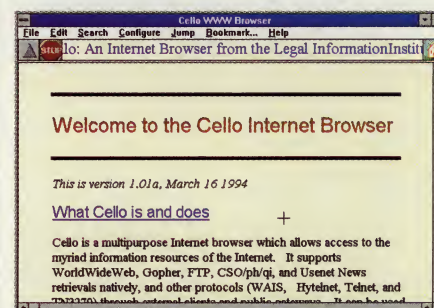
If you have a PC but aren't running Windows (believe it or not, there are such people), your only options are to run DOSLynx or use your service provider's Web browser (see "The Non-SLIP Connection"). DOSLynx is an easy-to-use, text-based browser from the University of Kansas, but there are no pretty pictures here.

You'll need DOS TCP/IP software to run the browser, which isn't that common (See the Browser Profile table). You can select links by double-clicking on them or by using the keyboard. You can also open multiple windows, so you're able to run multiple Web sessions at once, something only a few other browsers allow.

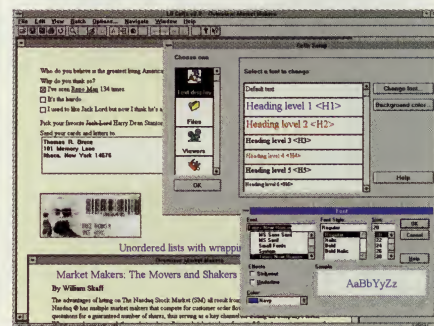
DOSLynx has all the usual browser features. You can define a home page, open an HTML document that's on your



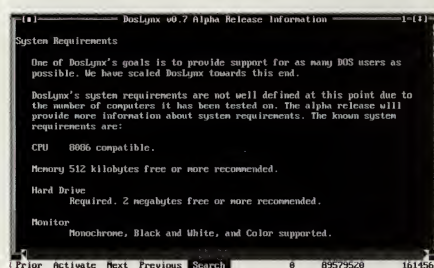
Air Mosaic adds pizzazz to the original.



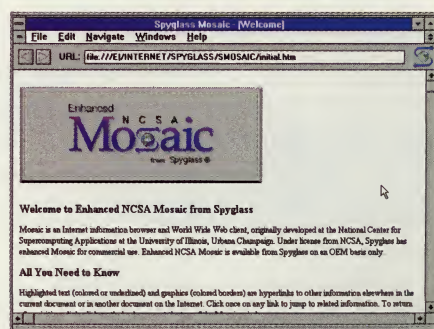
Cello 1.01a is old but getting a re-do.



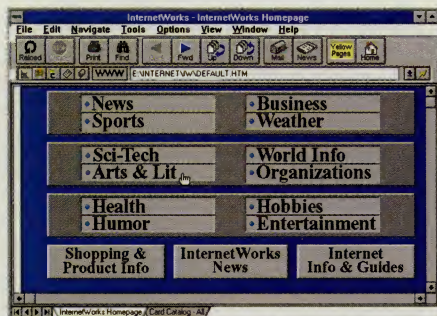
Cello 2.0 could be a contender.



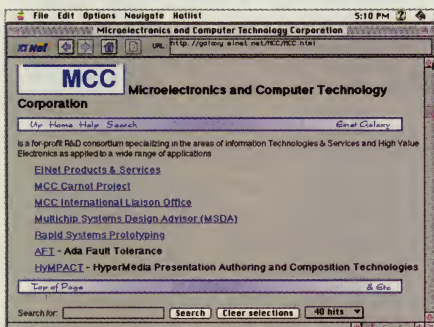
DOSLynx is solid but has no style.



Enhanced Mosaic is better but not best.



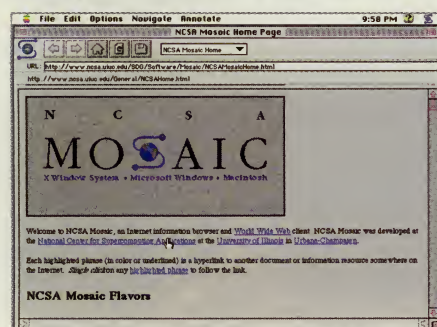
InternetWorks is the co-champion.



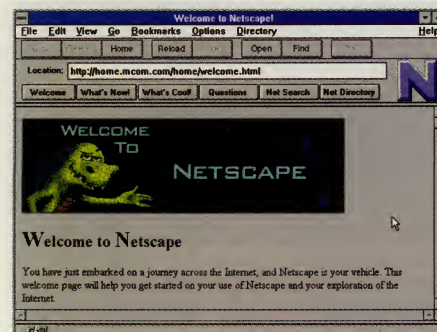
MacWeb's features beat its sibling's.



WinWeb jumped ahead but fell behind.



NCSA Mosaic: Dignity of an ex-champ.



Netscape's monster shares the crown.

hard disk, print a document, and search the current document. Unlike most browsers, which automatically display the URL in some kind of status bar, DOSLynx uses a menu command. A surprising feature of DOSLynx is its ability to save rendered text, stripping out all the HTML tags so you are left with plain ASCII. Although this is not that difficult technically, most PC browsers can't do it.

DOSLynx doesn't have a history list, but it has a hotlist; your entries are placed into a special document that you can view by pressing F1. This provides a quick way to create your own home page, too. The easy-to-use DOSLynx can do most of what you need. However, few people have TCP/IP connections in DOS, and most users want the pictures and colors that graphical browsers display.

Enhanced NCSA Mosaic

Enhanced NCSA Mosaic is a modified version of NCSA Mosaic, available for both the PC and Mac. However, Savoy, Ill.-based Spyglass has not made it available directly to the public. Rather, it's being sold to companies to be bundled with their computers or software; you might see it as Super Mosaic or Luckman Interactive's Enhanced Mosaic.

It certainly has been enhanced, at least in some ways. In others, the changes are dubious. Most of the toolbar buttons are gone, for one. And the file-download tool seems to have been hidden in this program; in NCSA Mosaic you select Options/Load to Disk and then click on the link connected to the file you want to download. With Enhanced NCSA Mosaic there's no command; you just have to remember to press Ctrl when you double-click the link.

The improvements are significant. The Windows version can save documents as text files, while NCSA Mosaic for Windows only lets you save HTML format. You can even save to the Clipboard. However, it's all or nothing. Unlike Netscape and Web Navigator, which let you save selected text, with Enhanced Mosaic you must save the entire document.

You can open multiple windows for multiple Web sessions, and it has a much simpler hotlist system—although you can't place hotlists onto the menu bar. You can't directly change all the browser fonts, either. You can select from several

overall styles within the program, but if you want to change a single font you have to edit the SMOSAIC.INI file.

InternetWorks

Simply put, InternetWorks is a top-notch browser and one of the two best Windows browsers available. (Unfortunately there is no Mac version.) It's certainly better than Mosaic and perhaps even better than Netscape.

InternetWorks is not really part of a suite of software, although it comes with e-mail and newsgroup programs. BookLink, which makes InternetWorks, was recently acquired by America Online, and it's unclear how AOL plans to distribute the program.

What's so special about InternetWorks? First, it's very fast. You can begin reading the first part of a document while the program continues transferring the rest of the text along with any inline images in the background. You also can initiate multiple sessions. In fact, you can split the window into two panes, hold down the Ctrl key, and click on several links to grab multiple documents simultaneously.

There's also drag-and-drop OLE support. You can drag a document into Word for Windows and turn the word processor into a Web browser, for example. In addition, a Web-like hyperlinked e-mail message can also become a Web browser. You probably won't want to browse the Web from within Word or e-mail, but you could use OLE to store Web documents inside Word documents and launch InternetWorks from within Word.

InternetWorks has an unusual caching system that stores every document it can (as much as disk space and memory will allow). It makes the documents available through tabs at the bottom of a window and in its Card Catalog system. By splitting the display, you can view a current document as well as one you viewed half an hour ago.

Not only does InternetWorks provide a sort of history list, its Card Catalog is used to create hotlists. You can drag entries from the "history" Card Catalog onto another Card Catalog, then save the new one. In this way, you can create catalogs for different subjects—for music, politics, books, and the like. You can save any sessions' Card Catalog for future use.

Web documents can be saved as HTML (but not as plain text) as well as in

a “hypermedia” format with graphics and all. Thus, you can save a document on your hard disk and view it in the future in all its graphical glory. Other neat tricks can be performed via a pop-up menu that lets you save a URL from a link, remove documents from cache, reload a document, and find information about a linked file. It has built-in viewing capability for a number of common file formats as well as a simple external-viewer configuration. An electronic copy of the *New Riders’ Official Internet Yellow Pages* is also included.

MacWeb / WinWeb

MacWeb and WinWeb are EInet’s sister-product Web browsers. The Mac version is more mature and includes a few more features.

For a few months in the leapfrog world of Web browsers it looked like WinWeb was the browser to watch—it was easier to use and seemed more stable than Mosaic. That was before Netscape came on the scene.

Perhaps WinWeb’s biggest improvement over Mosaic is that more of the configuration is done in a dialog box; Mosaic is still mired in lots of INI-file editing. WinWeb also has a progress display feature that shows how much longer it will take to get the rest of the document during transfers. Another plus is WinWeb’s history list, which displays document titles instead of URLs, making it much easier to use than Mosaic.

However, in the last few months these features have become de rigueur for new browsers, and WinWeb is still missing a few things. There is no way to save an HTML file or even view the source; MacWeb, on the other hand, allows both.

WinWeb has no Forward button; and the Find command doesn’t yet work. And unlike the browsers that have leapfrogged ahead (Netscape and InternetWorks), it uses the old form of document transfer—the “twiddle your thumbs until it arrives” form, rather than allowing you to view documents as they load. WinWeb requires that you set up viewers in the WINWEB.INI file, whereas the Mac version lets you do it from a dialog box, like most of the newer browsers. MacWeb’s history list also appears in a submenu rather than in a dialog box like WinWeb.

NCSA Mosaic

NCSA Mosaic was the first and is still the best known browser. Thus, it is often used as a benchmark against which to compare other browsers. While that’s changing quickly, Mosaic still remains an important program. There are a number of versions available, including those for Macintosh, Microsoft Windows, and Unix X/Window systems. There are even versions for Amiga and VMS systems, although these are modifications of the code and not directly from the National Center for Supercomputer Applications.

You’ll also find different versions available within platforms. There’s the Windows “released” version (v1.0), a 16-bit alpha version (v2.0alpha2), and a 32-bit alpha version (v2.0alpha8). The most up-to-date is the 32-bit alpha version, but it’s designed to run on Windows NT or Windows 95. If you have a 16-bit version of Windows you have to install Win32s before you can run 32-bit Mosaic (see the Browser Profile table). For the Mac world, there are two versions: one for any Macintosh running System 7 and another for the PowerBook.

Unfortunately Mosaic is showing its age. It’s not old in human terms, but things move fast on the Internet—and on the Web in particular. The NCSA programmers did a great job, and their handiwork has found its way into the commercial world in the form of licensed versions of Mosaic (see Enhanced Mosaic, above). But big business has taken over, and the NCSA can’t keep up. Many of the original Mosaic programmers have left to find places in the for-profit world, mainly at Netscape Communications Corp., where Netscape was born.

What’s wrong with Mosaic? The original Windows version was hard to configure, although that’s no longer completely true. Late in December 1994 NCSA released v2.0alpha8, which now lets you configure most options in a Preferences dialog box, rather than with the MOSAIC.INI file. But you still have to edit the INI file if you want to configure external viewers, so the job’s not yet finished. The Mosaic developers also moved the Display Inline Images command from a menu into the dialog box—convenient for stopping and starting the automatic transfer of inline pictures.

The Mosaic history list leaves much to be desired: It displays URLs instead of document titles, which makes it hard to find a document to which you want to return. Mosaic has a flexible hotlist system that allows you to create your own menus of Web documents that you’d like to visit again and to add them to a list box accessed from the Open URL dialog box. But overall, this system is rather awkward to set up.

Mosaic for Windows is slow. It doesn’t let you work with a document immediately; you have to wait until the entire thing has arrived—something many newer browsers (including its own Mac version) don’t force you to put up with.

Mosaic does have two features that haven’t caught on with most other browser developers: annotations and kiosk mode—a hidden feature. If you start the program with the -k parameter, it opens with many of the toolbar buttons and menu options removed. The first lets you add notes to documents you find on the Web. (You are actually adding the notes to a file on your hard disk, but whenever you return to the document you’ll see a link to those notes.)

The Mac version of Mosaic is a little better than the Windows version. You can save documents as text—rather than HTML only—and configuration is easier. There are a lot more configuration options, too. The program can change the color of a link once you’ve used it and keep history lists for as long as you like. You can change the size of different types of text at once—a sort of “stylesheet” feature that now appears on some other browsers. And you can create superscript and subscript in different types of text.


The Mac Mosaic hotlist is both simpler to use and easier to configure than that of the Windows version. And the annotation system is better: You can add text notes as well as record your voice, in true Mac fashion, and attach it to an annotated document.


Overall, Mosaic is a nice browser, and the changes in the Windows version are a great improvement. But it is by no means the best of the bunch.


Netscape Navigator


This browser originally was called Mosaic Netscape, from Mosaic Communications Inc. Now it’s Netscape Navigator, from Netscape

KEY

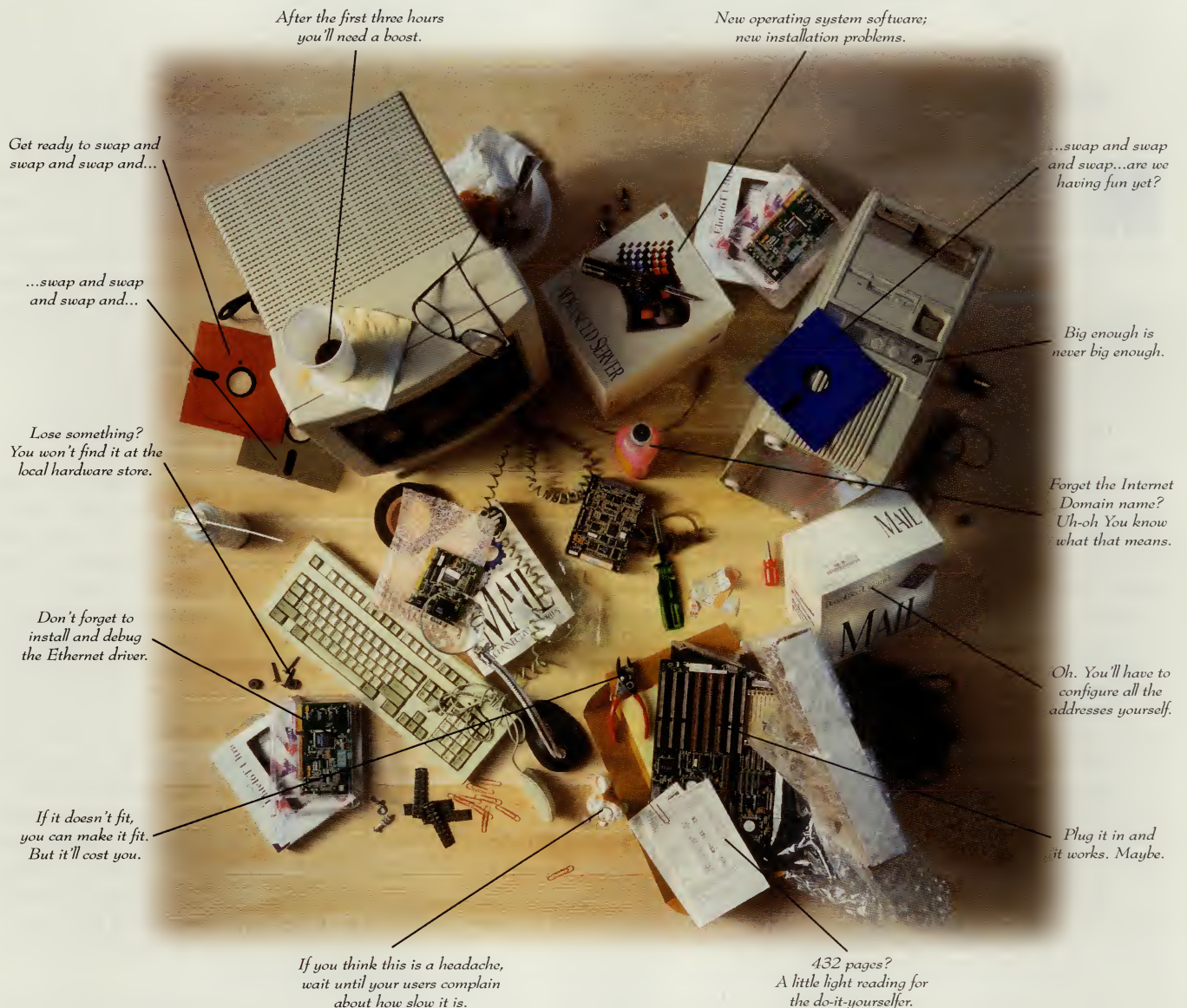
WIN= 

MAC= 

OS/2= 

DOS= 

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Communications Corp., nicknamed "Mozilla," the Mosaic killer. It was created by some of the original NCSA Mosaic programmers who joined James Clark (founder of Silicon Graphics) in a new commercial venture.

Netscape is shareware, with a \$39 registration fee (it's free for academic and non-profit use). Whatever its name, it's a very good program and is one of the two best browsers currently available. It comes in Windows, Mac, and Unix flavors, and all three versions are virtually identical.

Netscape is much faster than Mosaic. It speeds up your work by letting you view part of the document while it transfers the rest, including the pictures (you can see them appear as they are retrieved). Virtually all configuration is done through dialog boxes; there's no more playing around in INI files.

Netscape also differentiates links that you've used: Once you've accessed a particular document, the link is shown in a different color that will remain for as long as you want—just set your preference. You can clear the marking at any time.

Another Netscape breakthrough, at least for Windows browsers, is that it lets you select and copy text from a document into the Clipboard—something only one other Windows browser (Web Navigator) can perform.

Netscape also has a New Window command that lets you run multiple Web sessions at once. An optional Directory Button bar offers buttons to go to Web pages at Netscape Communications including What's New, What's Cool, a Netscape FAQ document, and other useful things.

The latest version of Netscape (version 1.0) includes a security feature that most Web users won't employ right away, but it provides a glimpse of things to come. It enables Netscape to display encrypted documents sent by a secure Web server (an https:// server) and to send data back to the server in encrypted form for secure transmission of credit cards.

Right now there are few https:// servers on the Net other than Netscape Communications' own, but this is likely to change as more transactions begin to be conducted via the World-WideWeb. All in all, Netscape is a top-of-the-line browser.

Samba



Samba is a simple, text-only Macintosh browser from CERN, the European physics laboratory where the World-Wide Web was born. However, development of Samba stopped late in 1993, and although you can still get the program, don't expect updates.

Samba has most of the basics, but no history list and nothing fancy. There is one unusual feature, however—something I haven't seen in any other browser. It's a Trace command that lets you watch as the program "renders" the document—converting the original HTML source document to the text you see on your screen. Although this is an interesting operation, for most users it won't be worth the bother of finding and installing the program.

Samba also lets you run multiple sessions, save documents as plain text, save them in "Samba" format (although I never could figure out how to use these files), and copy to the Clipboard.

WebWorks Mosaic



WebWorks Mosaic, once part of Quadralay Corp.'s WebWorks suite (formerly GWHIS), is one of a group of programs aimed at companies that want to create online documentation systems. There's not much to say about the browser, though. It's way behind others, being based on the Mosaic 1.0 set of features although, for some reason, that didn't stop Quadralay from giving it a \$249 price tag.

Available for Windows, a Mac version is expected soon. Nonetheless, if you run into this browser, don't bother using it. Rather, download Netscape or InternetWorks instead.

SUITE DEALS

These browsers come as part of a suite of Internet tools, as opposed to the stand-alone products. Also unlike the stand-alones, these are all commercial packages costing, in some cases, over \$100. Some of the products, however, like the Windows-based Air Mosaic (Internet in a Box/Air Series) described above, are available by themselves.

TCP/Connect II



We weren't able to obtain a copy of InterCon Systems' new Macintosh Web browser in time for review, but according to a spokesperson for the company, the browser (which doesn't have a separate name) supports a hotlist, can import Mosaic and Netscape hotlists, and can save but not view a Web page's HTML source. Users can try the software for 30 days; it is now available at InterCon's FTP site (see Browser Profiles).

Inter Ap: Web Navigator





Web Navigator, part of California Software's InterAp suite, is actually a commercial version of Cello 1.0 but with a face-lift. There are many similarities in the way it works. If you've used Cello 1.0, you'll be right at home with Web Navigator. Its different look is probably evidence that the California software programmers didn't like Cello's clunky interface, either.


Like its sibling, Web Navigator lets you save documents as text and copy selected text directly to the Clipboard from the browser window. It also makes opening files on your hard disk much easier. (Cello lets you copy to the Clipboard, but you have to use the Edit/View source command first.) Web Navigator sports two history lists, one each for the current and previous session. Unfortunately, it takes a double-click to operate a link.


InterAp has added two features to Web Navigator that it believes will make the overall package worthwhile. There's NetScript Manager, which lets you write Internet macros to automatically retrieve information at preset times. And the program has OLE functions, which let you drag Web documents onto OLE client applications such as Word for Windows much the way InterNetworks does. However, neither of these features were working in the beta version we reviewed.

KEY

WIN= 

MAC= 

OS/2= 

DOS= 

OS/2 Warp: WebExplorer



WebExplorer is an excellent browser. Its only problem is that it just runs under Warp—OS/2 version 3. If you're a dedicated OS/2 user, you'll want to use

this browser. If you're not running OS/2, you probably won't want to convert operating systems just to get a set of Internet tools, however good they may be.

WebExplorer's history list, Web Map, is great. You don't just get a list of document titles, rather you see a Web document showing (via indented folder icons) the path you took to get to each visited document. It really is a map rather than just a list.

The browser also shows you which links you've accessed. If you return to a document visited earlier, not only will the links you selected at that time have changed color, but the document will also have changed, showing the path you took from that document by inserting links from the other documents below the first link.

There's an excellent kiosk mode, too (although it's called Presentation mode). Press Ctrl-P and all the controls are removed, displaying the Web document full screen. All in all, a great browser. Now, when will IBM release a Windows version?

Internet Chameleon: WebSurfer

WebSurfer is a recent addition to NetManage's well-known Internet Chameleon package. The browser is quite reasonable, although it will be better when NetManage fixes a couple of bugs.

You can't save Web documents as text files, although you can save them in HTML format; you'll have to use the Edit HTML command to load the document into Notepad first. But the program doesn't properly convert the Unix documents found on the Web into DOS documents (the line break character is not properly converted).

You can fix this—and avoid problems with Notepad's 60-K document-size limit—by changing the Preferences to use a word processor such as Windows Write in place of Notepad. Write is able to open the document and save it with the correct line breaks. WebSurfer also doesn't display some graphics correctly. Simple inline images that appear correctly in other browsers appear murky and dithered in WebSurfer.

It does have some nice features, however. Like InternetWorks and SlipKnot (see "The Non-SLIP Connection"), WebSurfer can save hypermedia documents via an option called

Save Cached Documents Between Sessions. You are saving the entire document, including the inline images and not just the basic HTML text. That means that if you return to a document in a later session, it will be pulled from your hard disk, not from the Web itself.

There's also an excellent document-style configuration system that lets you change attributes such as document color, margins, line spacing, text sizes, fonts, colors, indents, and so on. The main drawback here is that you can only modify nine types of text, and as any HTML author knows, there are a lot more.

The Log system is interesting, too, letting you watch the commands run between your browser and the Web server—an interesting and handy way to get an idea of what's going on, and handier still if you actually speak HTTP (Hypertext Transfer Protocol). The browser also is fast, displaying part of the document immediately and filling the rest, including the pictures, while you read.

SuperHighway Access: WinTapestry

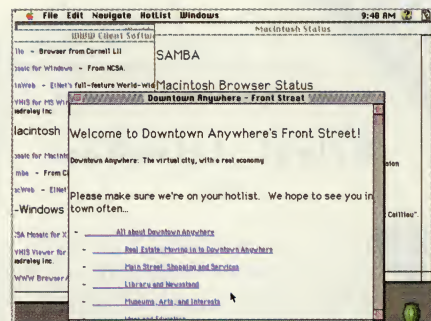
WinTapestry is an unusual combination application in Frontier Technologies' SuperHighway Access and SuperTCP Pro products. The program aims to organize your work around your interests rather than various tools. To do so, it brings together Web sites, Gopher menus, telnet and FTP sites, and so on in a sort of card file.

You can organize this card file into various categories—sports, music, art, television, for example—and put all sorts of Internet resources into each file. If you click on one of the entries marked with a Web icon, the Web browser window opens. It's a simple browser, with minimal configuration options.

There's no history list, although you can add bookmarks to a card file of your choice by using a menu command or by dragging a link to a card file to use that as a bookmark. The interesting thing about WinTapestry is how it integrates Web sites with all other Internet resources.

PROPRIETARY BROWSERS

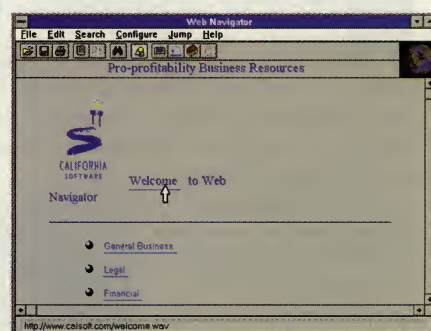
Several large Internet access providers supply their own software to users, which can only be used with the provider's system. For users who don't want the hassle



Samba is out of step with the times.



WebWorks Mosaic is far from a bargain.



Web Navigator is a finer-tuned Cello.



WebExplorer is a treat for OS/2 users.



WebSurfer: Some kinks and some class.

of manually configuring a SLIP or PPP connection, such software can make life easier.

Delphi: InterNav



Phoenix Technologies Ltd.'s InterNav is a Windows front end for the Delphi online service. (The name on the box is Internet Express, although the

program is InterNav.) While a Windows program, InterNav doesn't provide a true Internet graphical user interface. It's simply a serial communications program that offers a few tools to help you use Delphi's dial-in terminal connection. Once connected, you are working with the same menus and command lines you'd see if you dialed in with a basic terminal communications program.

There's a text-based Web browser at

the Delphi site—and quite a good one. InterNav helps a bit by letting you double-click on a word to transmit that word as a command. If you use the line-mode browser (see "The Non-SLIP Connection"), for instance, you can double-click on a link number instead of typing the number and pressing Enter. But this doesn't always work correctly, and is not like working with most of the other Web browsers here.

InterNav is good at what it does—providing a front end to a text-based terminal connection—but it's not a huge step forward in the graphical user interface world.

The Pipeline: Internaut



Internaut is the World-Wide Web-browsing component of Pipeline's tightly integrated suite of Internet programs. The software works with the Pipeline Network, a service provider in New York City, or with any provider that has licensed the system from Pipeline, such as California's Hooked. There are Windows and Mac versions of the Pipeline software, but at the time of this review, the Mac version didn't yet offer Internaut.

The Windows Web browser is simple but quite capable. Its strength is in the way it links to other parts of the interface. If you see a Web URL in an e-mail or newsgroup message, for example, you can highlight it and press Ctrl-W to launch the browser; click on a Web link to an FTP or telnet site, and Internaut opens the appropriate window. There's also a system-wide Bookmark system in which bookmarks are stored for FTP and telnet sites, Gopher menus, and Web sites.

The browser is relatively quick, although not as fast as Netscape or InternetWorks. Like those two browsers, it displays part of a document while downloading the

THE NON-SLIP CONNECTION

If you don't want or can't get a SLIP connection, there are some workaround solutions that will allow you to cruise the Web with a graphical browser.

SLIPKNOT

Designed for Windows users without SLIP or PPP connections, SlipKnot is a new and unusual browser: It's designed for a dial-in connection to a shell account. That's great news for people who access the Internet via systems that simply can't or won't provide a TCP/IP link, such as Freenets and many colleges.

Perhaps not surprisingly, SlipKnot is slower than a browser running on a TCP/IP connection, but it's a very good product nonetheless. The software includes its own terminal program to let you dial your service provider. Once you connect, you click on a button and SlipKnot launches your service provider's copy of Lynx, a text-based browser (see below). Although Lynx can't display images, SlipKnot can.

Don't get the idea that SlipKnot is a toy. It has many features available in the better-known TCP/IP browsers as well as features those browsers should have. For example, you can save complete Web documents—graphics included. (InternetWorks and WebSurfer are the only other browsers that do this).

SlipKnot uses this feature to speed up sessions: When you click on a link, the program checks to see if you already have the document on your hard disk. It has a good Bookmark (hotlist) system that lets you categorize your favorite sites in different folders and a history list that can display a list of documents that you viewed in a previous session. Links can be taken from the history list and placed in a bookmark folder.

SlipKnot is a sophisticated browser and a real boon to dial-in Internet users who have been feeling left out of the Web brouhaha.

THE INTERNET ADAPTER

If you don't have a TCP/IP connection to the Internet but still want to try out all the neat TCP/IP browsers,

there's hope. Consider using TIA, The Internet Adapter from InterMind Corp. and Cyberspace Development Corp. TIA fools your software into thinking it's running on a TCP/IP connection, even though it's really a simple serial connection.

Because TIA is a Unix program, you need to install it in your directory on your provider's system—something that your provider might not permit. And even if it does allow this, setting up TIA is not simple and will take a little time and effort. Nevertheless, it will likely be worth it, especially if you're charged a premium for SLIP access.

LINE MODE

If you don't want to install your own browser, there are other ways to get to the Web, albeit without the

graphics. First, there's the Web's original line-mode browser. You can usually start this from your provider's Unix prompt by entering `www`; links in a document will appear as bracketed numbers (as in "To find out more, click here [17].").

Then, rather than click on a link, you enter its number on the command line. If your provider doesn't offer the line mode browser, you can try it

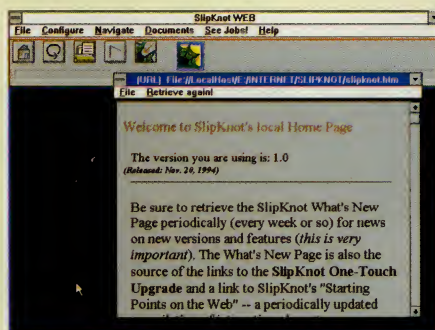
by telnetting to `nxoc01.cern.ch`. Only use this if you can't get Lynx, which is far superior.

LYNX

Available for virtually all Internet host computers, Lynx is an excellent text-based browser. You start it by entering `lynx` at a command prompt or by selecting it from your service provider's menu.

THE WEB VIA E-MAIL

Finally, there's the poor man's Web, which is grabbing Web documents through e-mail. This reminds me of an old TV game show in which a player is blindfolded and given a crossbow, then tries to hit a target by following a partner's instructions. It can be done, but it's frustrating. If you want more information, send e-mail to `listserv@info.cern.ch` with `www` in the message body, or send e-mail to `webmail@curia.ucc.ie` with help in the body of the message.



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Win Tapestry: A novel approach.



InterNav's line mode is uninspiring.

remainder. You can run multiple Web sessions, each in a separate window. There's a history list, but because it's at the bottom of the File menu, there's a limit to how many documents can be added. You can view the source document and save it, and you can copy a document's URL directly to the Clipboard. There's also a simple way to modify the way text appears on your screen by changing the "base font."

You won't want to get Pipeline just for its Web browser: Its strength is in its overall suite of tools. Its tight integration lets you cruise the Internet and jump from tool to tool quickly and easily.

Netcom: NetCruiser

NetCruiser is Netcom's suite of Internet tools. The Web browser is easy to use and, in some ways, too simple. It probably has enough features to keep most casual users happy, but don't expect anything fancy. The overall NetCruiser suite is a breeze to work with, although it doesn't have the sort of system

integration you'll find with Pipeline's. And Netcom has gained a reputation for being difficult to contact—either to connect to the system or to reach technical support.

NetCruiser's browser has a simple bookmark and history system and two built-in viewers that display text and graphics. You can save a document you are viewing in HTML format, but you can't print it. You can, however, run multiple Web sessions. The browser is easy to use and reasonably quick, although it doesn't use the special techniques employed by new browsers such as Netscape and InternetWorks to speed up Web work. It transfers all the document before displaying any of it.

UP AND COMING

As is the norm with software of any sort, new products are always around the corner. Several Web browsers are scheduled for release in the coming months.

Microsoft Word will soon release a

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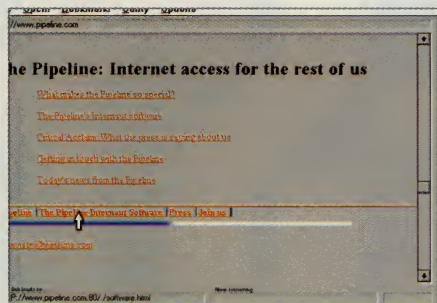


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Circle Number 74



Internaut is good but not great.



NetCruiser has utility but no flash.

free Word for Windows accessory, Word Viewer, that turns Word into a Web browser. The core code is based on the InternetWorks browser, although that won't be apparent to the user. Unfortunately, at the time of this writing, there was no beta version available. It should be out soon.

Quarterdeck, the company that brought you the QEMM memory manager, will soon release a Web browser, code-named Normandy. Its HTML-editing tool is already being beta tested.

PETER'S PICKS

So which browser is best? I choose InternetWorks. I like its look and feel, it's fast, it has loads of useful features, and it does almost everything I want. Certainly it could do with improvements, such as a quicker way to add URLs to its hotlist—Card Catalog—system. But overall, it takes the prize.

On the other hand, I'm very impressed with the most recent release

of Netscape. Browsers seem to leapfrog one another, with each leap taking only a few weeks. Right now InternetWorks and Netscape are the best. By the summer, who knows?

I've also used Web Navigator and Cello when searching for a document I want to save as text, though now I can copy to the Clipboard from Netscape. I'll even use my service provider's Lynx program if I want to get something done really quickly and don't require pictures.

So, here's the bottom line: If you have a Windows machine, get InternetWorks and Netscape and try them both. The new version of Cello sounds intriguing, too, and you might want to try it when it comes out. If you have a Mac, get Netscape. And don't assume that the commercial browsers are better just because they cost money. ■

Peter Kent (pkent@lab-press.com) is the author of The Complete Idiot's Guide to the Internet and to the World-Wide Web (Alpha Books).

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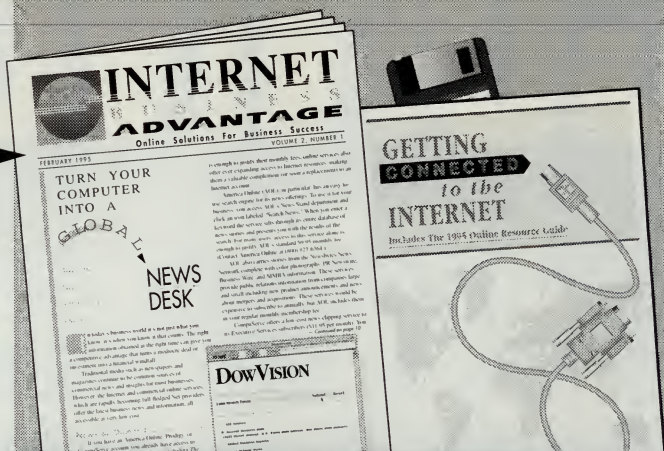
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Cello 2.0	Windows	Not available yet	Freeware	N/A
DOSlynx	DOS	FTP from ftp2.cc.ukans.edu/pub/WWW/DosLynx	Freeware	
Enhanced Mosaic (Super Mosaic)	Mac, Windows	Luckman Interactive: (800) 500-4411, (613) 729-7974	\$49.95	
InternetWorks	Windows	FTP from ftp.booklink.com BookLink: (508) 657-7000	Freeware	
MacWeb/WinWeb	Mac/Windows	FTP from ftp.einet.net/einet/mac/macweb; /einet/pc/winweb	Freeware	 Mac  Win
NCSA Mosaic	Mac, Windows	FTP from ftp.ncsa.uiuc.edu/Web/Mosaic	Freeware	
Netscape	Mac, Windows	FTP from ftp.mcom.com/Netscape Netscape: (415) 254-1900	Shareware, \$39	
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SUITE PRODUCTS				
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 Browsers are rated from 1 to 4 spiders, with 4 being the best.

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Wheels of Commerce

An Interview with CommerceNet's

Cathy J. Medich and Jay M. Tenenbaum

BY JEFF UBOIS

CommerceNet was launched last spring with the aim of creating an infrastructure for business-to-business transactions on the Internet. A non-profit consortium of Silicon Valley vendors and government sponsors, its goal is to help companies streamline their procurement and development cycles by performing transactions online. The project is seeking to overcome impediments to Internet commerce by developing new interfaces, security mechanisms, and indexing tools.

CommerceNet's solutions are based on World-Wide Web technology, and it has established a Web site (<http://www.commerce.net>) that serves as a mall for large and small businesses. The executive director of CommerceNet is Cathy J. Medich, and a core member of the CommerceNet team is Enterprise Integration Technologies (EIT), whose chairman and founder is Jay M. ("Marty") Tenenbaum, the visionary behind CommerceNet.

CATHY J. MEDICH

INTERNET WORLD: *Can you give us a thumbnail sketch of CommerceNet?*

CATHY J. MEDICH: CommerceNet is a consortium of companies looking to accelerate Internet use for electronic commerce. We are organized in a series of working groups which examine different issues, and with those working groups we hope

to influence the industry as a whole through new standards and business processes.

We launched in April 1994 and now have over 70 members. Our primary activities are achieved through pilots, which are member-driven projects. Most of the pilots are purely member-funded. Often other members get involved, or they may need advice and support; but except for technical support, they are usually funded completely by the interested members.

There are a few pilots that require more help. For example, one is a demographic survey of CommerceNet network users, and part of the core development team will be putting that on the server and logging the results. We're also doing a pilot server-certification authority to investigate the process that can be used to provide public-key certificates to Internet information providers.

IW: *It's interesting to see a non-profit consortium pursuing business use of the Net. Can you talk a bit more about how you are organized?*

CJM: We have a sponsor steering committee made up of sponsoring organizations and four elected members, which is responsible for the management of the working groups and pilots. That is the key body for setting directions. And we have a board of directors for fiscal and contract compliance.

The core development team maintains the server, manages the working groups, and is the technical support for the consor-

tium. We have three core development team members. Enterprise Integration Technologies does program management and technical deployment. It maintains the server, puts content up, and does much of the technical facilitation. We also fund a number of researchers at the Center for Information Technology at Stanford, which is doing smart catalog research with agent technology. And BARRnet is working on connectivity packages for small businesses. CommerceNet funding is for 12 people across those three organizations, support for the pilots, outreach, and marketing.

IW: *So who pays what to whom?*

CJM: We are government funded, so we have close relations with the Technology Reinvestment Project agencies. We also have a lot of members in the information technology business and in financial services, so it is an interesting blend of private and public interests. The government award provides \$2 million for three years for a total of \$6 million, which we must match with \$1 million in cash and \$1 million in in-kind contributions each year. Sponsoring membership is \$35,000; associate membership is \$5,000 to \$10,000, depending on their revenues, and we have a new international associate member level as well. So we are a \$3 million operation if you include membership fees and contributions and grants.

IW: *Can you talk about the working groups in more detail?*

CJM: We have six working groups: connectivity, network services—with a focus on security—payment services, catalogs and directories, Internet EDI (electronic data interchange), and design-to-manufacturing integration. These have spawned 10 active pilots that range from looking at the return on investment for a small business getting on the Internet to looking at infrastructure for security services.

IW: Any idea how much business is being transacted through your services today?

CJM: We are not a marketplace or service provider. From the perspective of Internet services, we are a directory service. We have set up a database of Internet consultants and service providers, and we have links to electronic commerce initiatives and to our members and subscribers.

The nice thing about the Net is that you can have direct contact between customers and suppliers. You don't need an intermediary for a transaction, so CommerceNet is not in the middle of transactions. We get mistaken a lot for a service or a network, and we're neither of these.

The number of transactions on the Internet is still pretty small; few organizations have catalogs with products for sale. There is also the question of what do you count as transaction revenue? The Internet is great for post-sales support, providing your installed base of customers with upgrades and training. That is where a lot of companies have focused their efforts. Then there is pre-sale promotion—getting the word out—and that has gotten a lot of attention.

Transactions have technical problems. Some people say you need more security, some say not, but as the volume of transactions grows, the stakes will get larger and security will become much more of an issue. Then there is a need for providing the settling mechanisms for payment—credit card, check, or cash—so that process works smoothly. Much of the initial development and work on that technology was going on last year, and we will see commercial products that support security and widely deployed payment mechanisms this year.

IW: How do you compare Internet-based transactions with EDI?

CJM: We have seen a lot of interest in EDI via the Internet. It costs a lot to get a VAN (value-added network) and a dedicated line, and in any case, you can't do it with 100 percent of your vendors. The Internet can provide a way of getting to more suppliers, and it's less expensive.

So for business-to-business communications, there are a lot of opportunities that without much effort you could implement, and that is where we focus our efforts.

IW: How about reaching the home- and small-office markets?

CJM: Business-to-the-consumer communications is harder. It may mean a new buying paradigm and new connectivity. If consumers are at home, how do you get to them? If you have a beautiful Web catalog, 14.4-Kbps access isn't much fun. So the bandwidth of the connection to the home is a barrier. ISDN may solve part of that, and we have a Pacific Bell CalREN award for ISDN and other advanced tech-

nology lines to support our pilot activities. We want to do outreach to small businesses, and one aspect is good connectivity. Unless you are local to the central office, the cost per minute can be high.

IW: Can you talk about payment technologies, particularly various forms of digital cash that you see as emerging settlement mechanisms?

CJM: We are focusing right now on the credit-card model, mostly because it fits the current process of how you buy things as a consumer and as a business. Our financial industry members say each of the payment types have advantages and disadvantages, depending on the type of transaction with which you are dealing. Our first priority has been credit cards, but I see digital cash having a real impact on the new market and use of the Internet.

Digital cash can be anonymous and it can be less risky for sellers because it is a cash transaction, but it requires lots of infrastructure. Banks have to sign up,



COMMERCENET'S EXECUTIVE DIRECTOR CATHY J. MEDICH.

buyers have to learn to use it, so it is a harder problem. It also has a lot of appeal, and what could really take off with digital cash is the sale of information on the Internet. You could see it, buy it, pay for it, and have it delivered.

You can see how that would redefine sales of packages of information at lower prices—lower than credit or check transactions can effectively offer. Digital cash would be an attractive technology to do that, and I think as some more innovative uses take off, digital cash will become a bigger factor.

IW: *I spoke to some people who say they have put up Web sites but nobody comes. How can small businesses ensure they are noticed on the Web?*

CJM: They can announce their presence at sites such as NCSA's What's New, the OpenMarket commercial sites index, and the Net-Happenings list. But outside promotion is as important as inside promotion. You need to let your customer base know you are there. Any business needs to think about both issues when launching Internet activity.

Then you need to be listed at popular sites; you need to make sure people find you when going to sites that get accessed regularly. For example, we get somewhere between 600 to 1,000 host computers visiting us every day. We are not the most active site, but we are definitely a highly active site. We have tracked where people go, and generally they want to find companies; they don't go into government or academic sites.

IW: *End users have the opposite problem: finding the right sites. How do you expect resource discovery to improve?*

CJM: With tens of thousands of Web servers in the future, browsing will be impossible and you will need good directories and services to find things—the model for access changes. There are directories of Web sites, but it still is a burden for the user to find all these. There is a need for protocols to find information and to offer that as a service or build it into a browser. Right now, the Web is using a browse paradigm that requires you to go and look at a lot of sites, but very few people have that kind of time.

Searching and discovery is weak. That might be the next problem companies with

commercial browsers attack. There is a need for protocols to allow software agents to query the various sources in a similar fashion. For now, users can go to the high-traffic sites or find them in some of the recent books about the Internet. There are a lot of them.

IW: *For companies that decide to use a Web service, how can they determine if they're reaching a significant audience? For example, if someone is thinking about joining CommerceNet, how can they predict their potential audience size?*

CJM: CommerceNet averages 600 to 1,000 different host computers visiting our site each weekday. The actual number of users is some multiple of this and is an estimate of the total audience size. Any directory or listing service should be able to provide companies with an estimate of the accesses at their site.

IW: *Some people have suggested that the Web might fragment as a result of efforts by vendors to establish unique security features and specialized transaction servers. Will the Web remain a single resource or might it split into multiple Webs?*

CJM: The Internet Engineering Task Force (IETF) and World-Wide Web Organization (W3O) are working hard to develop single standards. If the industry agrees on a standard approach, then it is going to grow a lot faster. I think the problem is that the Internet must be a resource that the user is going to want to use to purchase products and services. If there are multiple implementations that don't interoperate or if the market fragments, then users aren't going to come to the Internet as buyers and the industry isn't going to grow as fast.

That is a real risk and one reason that CommerceNet is trying to get people to agree on protocols and approaches that are standardized. The risk is to the industry as a whole, not one set of vendors. If you need different browsers to access different services, there will be real problems.

If the market fragments, users aren't going to come to the Internet as buyers.

IW: *For payment systems, too?*

CJM: There are precedents for clearing checks and authorizing credit. Our role is to influence that development. We want people to compete by providing better products and services, rather than see competition over different standards. This is especially true for payment systems—we wouldn't

want to see eight payment systems; we want one if at all possible.

IW: *What else should businesses think about before they develop a presence on the Web?*

CJM: The first step is to think about whether your target market is on the Internet; otherwise you may invest and find no one is interested. There are some profiles of users: They are educated, computer-literate, and employed. That may screen out some businesses but be good demographics for many others.

Second, you need to think about what type of investment you want to make. There are hosting services and online storefronts like OpenMarket that provide you with a suite of things from hosting your content to managing transactions. Using one of those services is far simpler than buying your own server, and those services tend to be inexpensive. If you want a modest presence, especially if you don't have the Internet experience, they are a good way to go. If you are really going to base a lot on your Internet business, then buy a server and hire talent.

IW: *What are your future plans at this point?*

CJM: 1994 was really a start-up year for CommerceNet. For this year, we'll be completing the pilots that have already started and launching additional ones focusing on the certification infrastructure and on EDI. We'll use the results of our pilots to influence standards development and industry directions. Where there is a need for new or revised standards, we'll actively work with the standards bodies to make sure that our experience is

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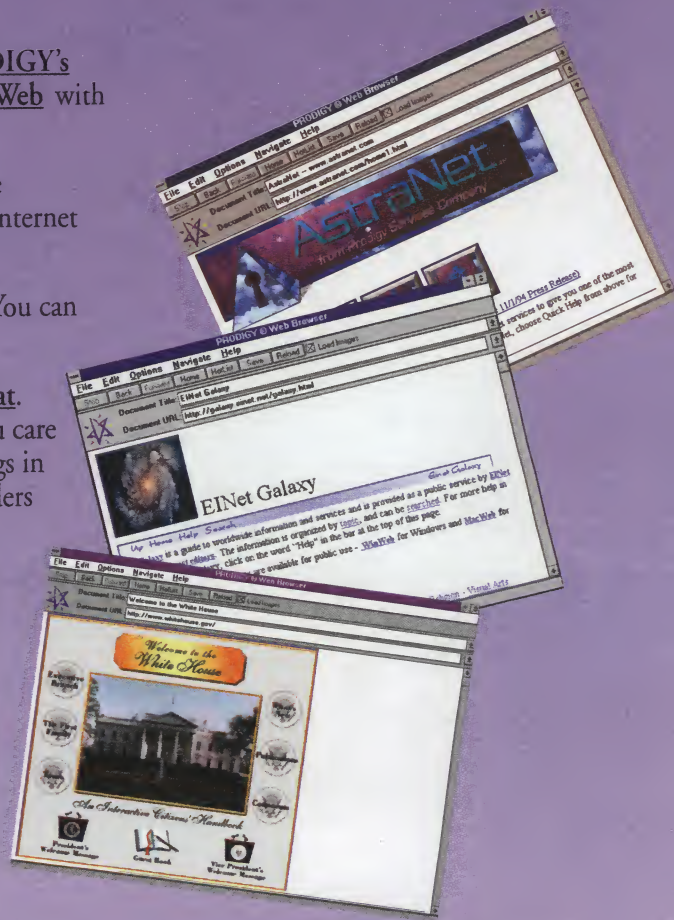
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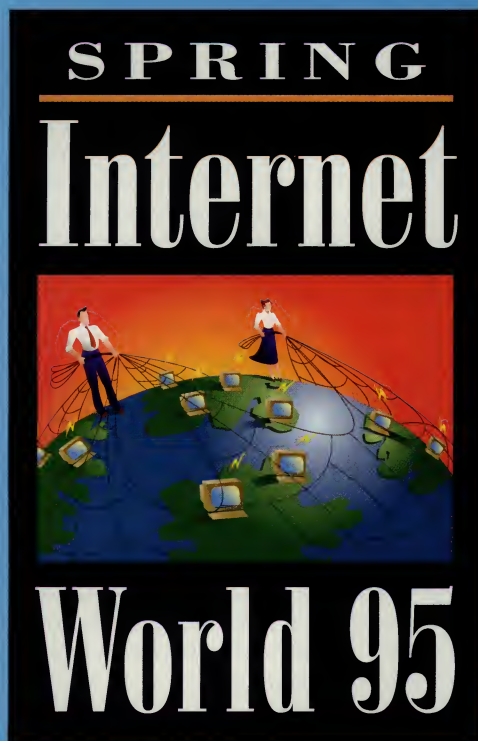
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understood and factored into the definitions.

We'll also be focusing on getting more small businesses involved. Our participation now is approximately 40 percent small- or medium-sized businesses. We'll be launching a number of outreach programs and pilots here in the Bay Area to involve more.

1994 was also a start-up year for electronic commerce on the Internet. This next year we'll see commercial products that help the next wave of implementors and solve basic problems like security. The potential is tremendous and we'll see even more startups and new activities launched in 1995.

JAY M. TENENBAUM

IW: *Transactions seem like the Internet's next killer app. What's needed now to make transactions feasible?*

JAY M. TENENBAUM: The key enabler for electronic commerce is transaction security, and basically what that means is, first and foremost, the ability to authenticate who is at other end of a connection so you know whether to give them access to sensitive data. The second aspect is ensuring the privacy of sensitive data you are sending—a bid amount, a credit-card number, or a new CAD drawing—things you don't want other people to see. The third aspect is digital signatures: to be able to sign non-repudiably, which is the basis for contracts and audits. The fourth element is message integrity.

When you have security, you have the basis for payment systems. Once you can sign and encrypt, it is like a digital piece of paper that can be a check, credit-card slip, or debit-card voucher. The only difference is the arrangement with your bank. So the security is really the key.

In the end, you want all these things put together so you can send or receive a digitally signed object, put it on a disk, and prove later that someone signed a document at a certain time. Those are the things that are the basis for electronic commerce, and all of them can be provided by public-key cryptography. The key aspect is spontaneity, as opposed to making transactions by prior arrangement.

Public-key cryptography is a technology that has been evolving since the mid-1970s. The new breakthrough is taking public-key cryptography and doing work

at the protocol and application level to integrate it seamlessly into commerce. To date, public-key cryptography has not taken off for a lot of reasons. There is a need to create an infrastructure for distributing and certifying the validity of public keys. Also, using public-key cryptography has had the aspect of a secret decoder ring, and what we need is to have it woven seamlessly into the way people are doing their business.



EIT FOUNDER AND CEO JAY M. TENENBAUM.

IW: *So what is EIT doing in this area?*

JMT: We have done a lot of work in support of CommerceNet that we are now commercializing in a joint venture with RSA Data Security Inc. called Terisa Systems. We formed the joint venture to take their encryption technology and EIT's protocol and application work and bundle it into a toolkit to be made available to developers.

With the exception of Netscape, Terisa has relations with all the major players—OpenMarket, Spry, Spyglass, Verity, and others. We are working on Secure HTTP (S-HTTP), an extension of the Hypertext Transfer Protocol encompassing encapsulation and negotiation. You encapsulate messages when you are doing encryption because you need to include information about that message—for example, the public-key certification authority.

Then there is the negotiation part because there many different cryptographic suites that use different clients and servers but need to talk to each other. So you have them negotiate to determine the right level of security, and that is particularly important when you conduct business internationally. S-HTTP is an open and extensive protocol because of the negotiation feature, and the IETF and W3O are actively pursuing S-HTTP. In fact, Netscape's SSL protocol could be a part of it, but until the company implements S-HTTP, its protocol remains idiosyncratic.

IW: *People have been talking about public-key encryption for almost 20 years. Why has it taken so long to gain wide use?*

JMT: One of the main inhibitors is the infrastructure issue—where do public keys come from? We have had Privacy Enhanced Mail (PEM) for 10 years but few use it. What hung it up is this idea of a big hierarchy in which the government authorizes unique IDs. That model is reasonable for security, but not for commerce. People carry all kinds of credentials that range from a passport or a professional license to a Blockbuster video card. The same thing has to happen on the Net: You'll have your digital wallet with different certificates for different purposes that come from all sorts of places. So any company should be able to issue credit to whoever it wants—customers, suppliers, partners, and with different levels of access—to get into secret records or to rent a videotape. The software Terisa is providing supports that.

IW: *How do you see concepts of intellectual property evolving, especially given that much of what is sold on the Net is information-based?*

JMT: At first, companies will sell things that can be delivered online: software and information. For information, the near-term solution is digital watermarking, which allows you to hide the I.D. of the

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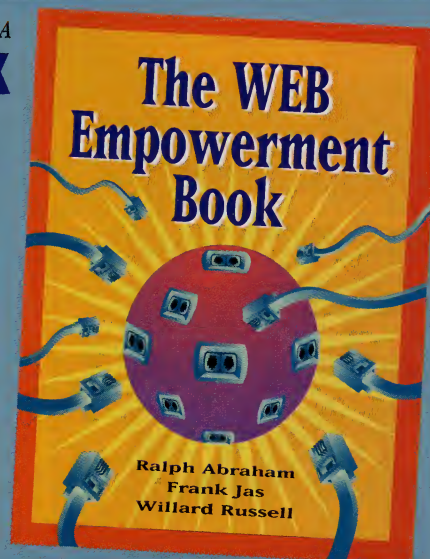
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The Web Empowerment Book is one of the first books devoted entirely to the World Wide Web, a hypertext-linked system which enables Internet users to navigate readily through a maze of Web servers and providers. This "how-to" book explains in simple, pragmatic terms how to establish your own connection, navigate through, and understand the WWW in three basic steps. It also contains coverage of the requisite UNIX commands. This well-illustrated book includes a full color tour of the Web (Chapter 2, A Brief Tour) and acts as a guide for potential and current Web-users in gaining access to a storehouse of freeware and shareware which provides a multitude of appropriate browsers and display software to facilitate use of the Web. The freeware and shareware will be made available through a variety of Internet services.

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by DENNIS WOO, Technology Consultant, San Francisco and
RAY COLE, AT&T Global Information Solutions, San Diego

WEBMASTER: AN INTRODUCTION TO ELECTRONIC PUBLISHING ON THE GLOBAL INTERNET

A Webmaster is a publisher of electronic documents on the World Wide Web, an Internet-based, graphics-rich system used by everyone ranging from the White House to the e-zinc publisher in college dorms to reach a global readership. Webmaster provides a lucid, step-by-step guide to creating Web documents using Hypertext Mark-up Language (HTML), Common Gateway Interface (CGI) scripts, and multimedia authoring tools. Also covered are electronic publishing dos and don'ts, ethics and legal issues, and advice from successful Webmasters through interviews. Included are sidebars on extensions to HTML for Netscape, TIA (The Internet Adapter), and a checklist on retooling your skills if you are a desktop publisher/graphic designer. Clip-art, scripts, and regular addendums will be made available via the TELOS Publications Web site (<http://www.telospub.com>).

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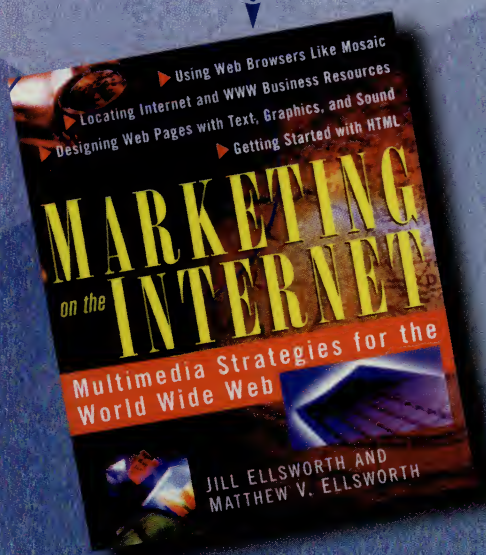
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Software is somewhat different, but you can enclose it in a cryptographic package that will not allow it to be run without an authorizing key. Because software is run on data that varies from time to time, you can, in fact, obtain reasonable protection by enclosing a key to turn it on. Those are short-term solutions.

Long term, I am with the folks who say that if the price is low enough, you will be able to exploit the "large number effect" of the Net. If I can sell an article for two cents to enough people, I won't need to worry about getting more than that.

We may also see software marketed through fees for use, or maybe as a service you use over the Net. For example, maybe a plane designer would use a digital wind tunnel but only run a simulation twice a year. He could send a design off, get back an annotated movie, and pay a fee. That kind of thing is going to be increasingly popular—the notion of selling integrated services rather than software over the Net.

IW: *Louis Harris and Alan Westin recently published a poll indicating that the better the customers are, the more concerned they are about privacy. Given that interactive buying is also a great data-collection service, how will vendors assure people that buying, say, a radar detector, won't raise their insurance premiums?*

JMT: There are a number of companies positioning themselves to gather lots of information about their users, such as ProductView Interactive and Internet Profiles, which wants to be the Nielsen service of the Net. All these are quite responsible in recognizing that the data assets they have are valuable, and they are asking people to accept direct payment for the use of their personal data or to accept some value-added service—for example, making them aware of information they might want to know about.

IW: *If you read alt.internet.media-coverage, it's obvious that the mainstream media isn't doing a great job reporting on the Net. What are some of the worst misconceptions you see floating around these days?*

JMT: Well, one is the paranoia that is going around. Firewalls work if you configure them properly, and as far as going

in with authenticated access to Web servers, they are completely safe; there are no problems. The security issue will get solved this year.

Others say there are 20 million users but the amount of money made on the Internet is zero. That is rubbish. The key breakthrough is the ability to get paid, and that will happen in the first quarter of this year. Spry and Spyglass, for example, will release products that handle transactions.

IW: *Any other thoughts or predications?*

JMT: Well, in terms of numbers, there are over 50,000 companies disseminating information and services this year, and there will be at least one million in five years. That will be absolutely mainstream commerce. Consumer things will come more slowly because the Internet does not yet provide the kind of fluid, real-time performance consumers expect, but that too will come.

You will also see evolution in access pricing. When it's possible to make free video phone calls anywhere in the world, the telecom companies will take action to stop it, not just for pecuniary reasons but because people will have to face the fact that one user can use one million times more services than another.

The interesting question is how the Internet will converge with consumer-driven high-bandwidth services. You might have one cable TV channel that will be divided into 100 Web channels and the ability to reserve higher levels of bandwidth. You will also see Mosaic-style things built into TVs and game machines.

There is also going to be lots of client-side scripting and agents. You will see the Web turn from a passive publication medium into something much more collaborative. Everyone will be a publisher as well as a reader, so there will be more shared presence and interaction with people at other sites.

Finally, VRML, the Virtual Reality Markup Language, will allow three-dimensional environments so that on a wall, for example, there might be two-dimensional Web documents you can click on.

In general, there is no question that the Net is going to profoundly change commerce, education, government, and manufacturing, and I am very excited to be a part of it. ■

Jeff Ubois (jubois@netcom.com) writes about the Internet and other topics for the trade, business, and popular press.



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The Medium Is the Matrix

Publishing on the World-Wide

Web is blazing trails and
establishing new modes
of communication.

BY KEVIN M. SAVETZ

The pen is no longer the only writing implement mightier than the sword, and freedom of the press no longer requires a press. The mighty pen and grinding printing press are being challenged by something new: a quirky language called HTML (Hypertext Markup language) and a paperless printer known as the World-Wide Web.

In fact, the Web is changing what it means to publish a newspaper or magazine. Today, dozens of periodicals exist only as organized globs of ones and zeros on a Web page. The Web is even changing how publishers of traditional journals market their products.

No one at *Internet World* expects you to abandon your trips to the newsstand or cancel your favorite magazine subscriptions in favor of a PC and modem. Reading the latest news and gossip on a computer screen will probably never be as enjoyable (or as portable) as curling up in bed with a copy of *Reader's Digest* or

showing your nose deep in the *Examiner* to avoid eye contact with strangers on a cross-town bus.

However, you should expect publishing on the World-Wide Web to change the way publishers think, to change the way you perceive the media, and to give a voice to just about anyone who has something to say. Web publications in many cases will complement rather than replace traditional methods of publication (just as MecklerWeb complements *Internet World*). An increasing number of publications—including *Newsweek* and *Time*—are establishing Web sites and producing online versions. Although publishing on the Web will never replace traditional printed media, it already has begun to redefine it.

The type of content publishers ("publisher" being defined as anyone with access to a World-Wide Web server and a cursory knowledge of HTML) place on the Web can vary considerably. There are dozens of Web publications that don't exist in the "real world" of print media.

Other magazines and newspapers publish their entire contents online as well as on paper. And many other traditional publishers place excerpts of their paper product online in the hopes that you'll purchase the whole enchilada.

The *San Jose Mercury News*, a forward-thinking newspaper based in central California, is bridging the gap between traditional publishing and electronic publishing.

"The technology is providing many different ways to distribute traditional newspaper information. In Silicon Valley (our market), it's important to reach out to users using new technologies. Our readers expect it, so we try to provide it," said Chris Jennewein, general manager of Mercury Center.

According to Jennewein, the Web's Mercury Center is accessed about 10,000 times every day. In addition to the Web site, the *San Jose Mercury News* operates a news forum on America Online as well as a news-clipping service called NewsHound (see sidebar "All the News



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BS battles for its final

COMFORTING ARMS: A man consoles his wife after putting their belongings in a truck in Grosvenor Park. Their apartment was destroyed overnight during a missile attack by Russian forces on the southern part of the city.

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The Vatican summoned Bishop Jacques Gaillot to Rome the only time in the 20th century.

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This is the daily online edition of *The San Francisco Free Press*, the newspaper of the striking employees of the *San Francisco Chronicle*, the *San Francisco Examiner* and the *San Francisco Newspaper Agency*. It is produced by members of Bay Area Typographical Union Local 23, Photographers Local 4, Service Employees Local 67, Paper Handlers Local 24-26, and Western Local 468. Please address all inquiries to: *San Francisco Free Press*, 433 Hume Street, San Francisco CA 94103. Telephone: (415) 421-4833. E-mail: fpnss@comcast.com.

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That's Fit to E-Mail").

There's nothing magical about traditional methods of publishing. "We're not wedded to ink on paper,"

Jennewein added, "We want to be the one essential source of information for our market in the South Bay. A large part of our market wanted to receive information electronically. We feel strongly that we've got to lead the market, to lead today's readers into more personalized information retrieval."

(To see the *San Jose Mercury News's* efforts, point your Web browser to <http://www.sjmercury.com>.)

An advantage of providing digital news to its readers is that the *San Jose Mercury News* can be read far and wide—by people way outside the paper's physical geographic area. This is true of most Web-based publications.

The New South Polar Times is a biweekly newsletter written by one of the staff at the Amundsen-Scott South Pole Station. The workshop leader, Katie Wallet, and the officer in charge of NOAA operations at the station, Lt. Tom Jacobs, decided that students and teachers from around the world would be interested in learning about Antarctica, the scientific research that's taking place at the station, and life at the station. Realizing that communication with individual classes was prohibitive because of the busy schedule of the staff at the station, they decided to create a newsletter that would be made available on the Internet.

Indeed, the newsletter is rather amazing. Written by a fairly lonely and very cold individual, it can give you a glimpse of a life you probably never considered—performing scientific experiments in temperatures of -30°C ("a rather warm day") in the dead of an Antarctic winter. This is a clear example of a person who doesn't have access to traditional publishing channels—and a newsletter that is perfectly suited to the global nature of the Internet. Check it out at <http://www.deakin.edu.au/edu/MSEE/GENII/NSPT/NSPTHomePage.html>.

Even if your location is more civilized and your impact on the world at large less profound, a Web-based publication may be just the thing to make your voice heard. For instance, countless individuals have created online 'zines—electronic versions of the cheap art and gray-matter venues that litter college towns around the world (see sidebar "Zines and Things").

It may sound trite, but the Web is the closest thing to a level playing field in publishing today. The Web page of a Fortune 500 company is no more expensive, no more important, and no easier to access than the one coded at 3 a.m. by a college freshman with a head cold. Everyone from bored kids to experiment-

The Web is the closest thing to a level playing field in publishing today.

ing teachers—people with a lot to say or nothing at all—are publishing their pictures, prose, and persona on the Web.

Computer Mediated Communications (CMC) magazine is the perfect example of a publication that's distributed solely on the Net (<http://www.rpi.edu/~decemj/cmc/mag/current/toc.html>). CMC reports about people, events, technology, public policy,

culture, practices, research, and applications of computer-mediated communication. It is distributed for free over the Internet, is privately published, and does not accept advertising. It does, however, exemplify Web-based media.

Boardwatch magazine, a print magazine covering BBSs and online services, also offers a Web site. Since the publishers have a paper-based magazine to sell, *Boardwatch's* Web site (<http://www.boardwatch.com>) provides useful information without giving away the proverbial farm.

One of the finest and shortest-lived Web-based publications was the *San Francisco Free Press*. For 16 days in November 1994, striking union writers, editors, and other workers for the *San Francisco Chronicle* and *San Francisco Examiner* published a free online newspaper. The *Free Press*, known as "Freep" to

ALL THE NEWS THAT'S FIT TO E-MAIL

Of course, the Web isn't the only way to put a newspaper online. Electronic mail, available to millions more users than fancy Web browsers, is still the simplest way to get all the news.

The Mercury Center NewsHound is an easy-to-use news-clipping service. It automatically searches the stories and classified ads in a variety of newsy periodicals, including the *San Jose Mercury News*, the *Chicago Tribune*, *Detroit Free Press*, *Miami Herald*, *Philadelphia Inquirer*, *The New York Times* News Service, Associated Press, and PR Newswire as well as published and unpublished articles from 60 other sources for a total of about 2,000 articles a day. Articles and ads matching your interests are sent directly to you via e-mail.

Here's how it works: Once you sign up, you send a search request via e-mail to the NewsHound program. Each request that you submit includes lists of required, possible, and excluded terms.

Every hour or so, NewsHound checks to see whether any of its recent news and ads match your request. It automatically sends the ones that seem appropriate to you via e-mail. I use the service to receive articles about online services, my favorite musician, and ads for used computers.

Maybe this is what's meant by "power of the press"—the ability to receive just the news that's relevant to your interests or business. NewsHound currently has about 1,500 subscribers. While not free, it's inexpensive enough to be affordable for just about everyone.

The special rate for charter subscribers is \$4.95 per month for up to five search profiles. That is a flat rate that applies regardless of the number of stories or ads delivered to you during the month. (The rate for non-charter subscribers is \$9.95 per month.) For more information, send e-mail to newshound-support@sjmercury.com.

its followers, stopped publication when the striking workers resolved their contract disputes.

Back issues are still on the Net at http://ccnet.com/SF_Free_Press, and they're worth a look. The *Free Press* is a beautiful example of how a group of talented newspaper workers can get by without so much as paper to print on. Unfortunately, it couldn't (and wasn't intended to) make money.

Of course, publishing on the Web isn't the perfect answer for everyone. The major barrier: It's cumbersome to receive money over the Internet and difficult to limit access to paid subscribers. "The easiest way to approach Internet publishing is not to try to get money from the users—basically because we don't currently have competent—if any—monetary charge and transfer tools," explained Internet analyst Daniel Dern.

Dern notes that this is changing, but don't hold your breath. "Meanwhile," he added, "either find a way to get paid for

'ZINES AND THINGS

If you're looking for some newsy reading material on the Web, look no further than Rosalind Resnick's page, a compilation of 50 reviews of major electronic publications. Check it out at <http://www.gate.net/~rosalind>.

Mind candy, anyone? Surf over to *Stream of Consciousness*, a poetry and art 'zine, at <http://kzsu.stanford.edu/uwi/soc.html>. Or read *Verbiage*, a collection of short fiction at <http://sunsite.unc.edu/boutell/verbiage/index.html>. Then read *Digital Rag* (http://www.wimsey.com/Digital_Rag/current/index.html), an odd little 'zine that defies description.

A huge list of 'zines is available by gophering to <gopher:cic.net> and choosing Electronic Serials.

making the information available or simply give away access to the information for free. Done appropriately, giving your information away for free can be an effective way to gain visibility, publicity, and generate sales of larger objects—e.g., CD-ROMs, books, floppies, art prints, T-shirts, and more."

Another problem with Web publishing stems from the nature of HTML, the

code that represents how images and text are placed on the screen. HTML has been called (kindly) a graphic designer's nightmare. However, the recent past has seen additions to HTML (pushed forward mainly by the Netscape Web browser) that downgrade HTML from a nightmare to a bad dream.

What about advertising? Advertising on the Web is less of a problem than you might think. Corporate logos and Web page "sponsorships" are popping up all over the Net, and why shouldn't they? What do you think those elegant graphical Web browsers are for anyway? (Have you seen the AT&T logo on the Web yet? "You will.")

1995 is just the dawning of publishing on the Web. As HTML becomes more user-friendly and robust and more of us get faster Internet connections, and still more folks get access to the Net, the quantity and diversity of online publications will flourish. ■

Kevin Savetz (savetz@northcoast.com) is author of *Your Internet Consultant—The FAQs of Life Online* (SAMS Publishing).

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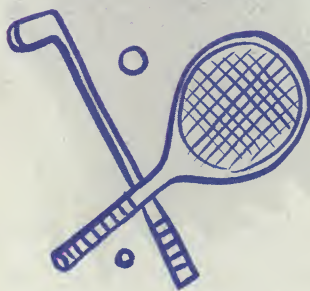
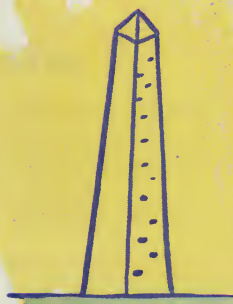
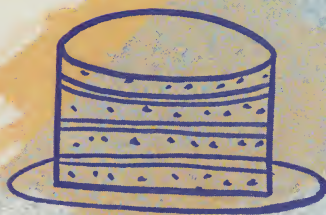
You might want to hurry, though. You know how news like this gets around.

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SITES



de Michie

All hooked up and no place to go?

Fire up your browser and surf
on over to these...

Hot Spots

BY AARON WEISS

Let's see some hot sites! No, not those kinds of sites—rather the popular, the niche, the commercial, and the bizarre. The dynamic nature of the Internet in general, and the World-Wide Web more specifically, necessitates that hot sites be both temporary and subjective in nature. But then, so are M&Ms.

A commonly cited intro-course statistic is that any one person is only six people removed from knowing anyone else. True or not, this principle virtually defines the Web. A few links in any direction will likely net you everything showcased below, raised to the tenth. These sites, then, are bound to be somewhat arbitrary, but think of the surfing time saved that you can now use for more productive and necessary endeavors. Breathing, for instance.

So is this a popularity contest? No, it's <http://wings.buffalo.edu/contest>, home of the Best of the Web '94 awards. And although it lacks slinky-gowned starlets and oxygen-exhausting acceptance speeches, it does offer the collective opinions of some 5,100 of your Net peers.

For example, in the Best Navigational Aid category, top honors go to Oliver McBryan's World-Wide Web Worm (<http://www.cs.colorado.edu/home/mcbryan/WWW.html>), which is one of

several projects intended to help Web users by providing a comprehensive search tool for the vast and scattered Web. Best of the Web categories range from entertainment to commercial services to technical awards for document design and innovative HTML usage.

The hyperlinked nature of the Web makes the Best of the Web '94 page much more than just a list of popular votes. It's a wonderful place from which to launch a Web surf, and its links to winners and runners-up will bring you to most of the major available Web services.

Ah, but who's content with only one awards show? Once in the glitterati spirit, cruise over to the GNN Best of the Net Honorees (<http://nearnet.gnn.com/gnn/botn/index.html>). While not nearly as comprehensive a project as the Best of the Web '94, there is a small but varied selection of useful Web pages. My pick, because I find it both useful and darn fun, is David Koblas's Currency Converter (<http://www.ora.com/cgi-bin/ora/currency>). It allows you to see the value of a nation's currency relative to the other major nations'. Good for planning trips, fun for imagining planning trips.

Not to be left out, *PC Week* offers its own Best of the Web (<http://www.ziff.com/~pcweek/pcwbests.html>), another great place from which to launch a Net surf. Included are a page of news sources and

online magazines that could keep you reading through links until your eyes implode as well as a nifty page of links to noteworthy user home pages.

And for those in desperate need of procrastination, note the Wall O' Shame on Danfuzz's home page (<http://web.kaleida.com/u/danfuzz>). It appears to be a collection of miscellaneous unusual errata—the stuff of forwarding nightmares, no doubt.

Are you completely without direction? Not a problem as far as the Web is concerned. Pop over to <http://www.infi.net/cool.html> and let the Cool Site of the Day page lead your life for you. After drooling away the day clicking on Previous Cool Sites of the Day links, you might need to stop in at the Webaholics Home Page (<http://oucsace.cs.ohiou.edu/personal/rbarrett.html>).

If your remorse tends to run more spiritual than humanistic, the Digital Priest is waiting for you at the Confession Booth (<http://anther.learning.cs.cmu.edu/priest.html>). Is voyeurism your vice du jour? Then read the Scroll of Sins, cataloging fellow users' wickedness. Be warned—you will need a forms-capable browser like Netscape to receive absolution.

What better hangout after a spot at the confessional than the Virtual Meetmarket (<http://www.com:1111>)? Place your own personal, if you wish, or just shop around. GIFs are available for the suitably vain. Then head straight back to the confessional.

Once you've found your new mate, you can cuddle up in some appropriately themed sweatshirts from Net Sweats and Tees (<http://www.icw.com/netsweat/netsweat.html>), share a sweet bottle of 1993 Graacher Domprobst Riesling Beerenauslese from Sam's Wine Warehouse (<http://www.ravenna.com/sams>), and browse through reviews of current video releases at <http://sfgate.com/~sfchron/movies/videoguide.html>. Note that you will actually have to leave your home to get the videos. Sorry. Just be sure to visit <http://www.ag.com:104/condom/country> before the movie ends. And hit the Confession Booth once again.

Taste. Some people have it and some just don't. If you do, you'll also have the Tori Amos Homepage (<http://www.mit.edu:8001/people/nocturne/tori.html>) on your hotlist and similar such home pages for the Kids in the Hall (<http://www.usit.net/public/jmbell/kith/kith.html>), the Simpsons (<http://www.digimark.net/TheSimpsons>), and the second coolest pet on the planet—the Ferret Home Page (<http://www.ceas.rochester.edu:8080/ee/users/rhode/index.html>).

If the jet stream favors tennis this time of year, or you'd just like to imagine that it does, there's a score of information to be found at the Tennis Server Homepage (http://arganet.tenagra.com/Racquet_Workshop/Tennis.html). Or, for more indoor fun, try the Games Domain (<http://wcl-rs.bham.ac.uk/GamesDomain>), which is overstuffed with game FAQs, walk-throughs, home pages, and of course, more game-related links.

Do you want to spend more money? Sure, we all do! For those in need of kitsch, head immediately to <http://www.dhm.com/lpf.html> and snag yourself a hip and trendy license plate frame. Complete with your e-mail address or your own URL, snap this baby onto the vehicle you least mind getting shot in and advertise your perversion to the world.

Those looking for an item in the used market can save themselves time scouring through the marketplace and for-sale Usenet newsgroups by linking to the

Classified Advertising page at <http://www.imall.com/ads/ads.shtml>, which allows you to run searches on its own array of classified ads as well as the Usenet for-sale newsgroups gatewayed into the service.

Or maybe you don't know exactly what you want but you feel compelled to spend money nonetheless. The Internet Shopkeeper (<http://www.ip.net/shops.html>) is an expanding mall on the Web where anyone can

set up and run his own shop. Main Street at Downtown Anywhere (<http://www.awa.com>) provides a weather-free, gummy-side-walk-free environment in which to window shop. For some regional fare, visit Vermont's own cybermall, CyberMont (<http://www.cybermalls.com/cymont/cymon-mal.htm>—that's correct, there is no l at the end of the address).

The truth is that these are just a few, randomly selected shopping spots. There are so many malls on the Web that you might mistakenly believe you've passed through a gap in the space-time continuum and re-manifested on Long Island. If you like that feeling, then follow the mouse tracks to the Hall of Malls. Some 20 or more malls can be linked to from there—with no whining kids. By the time you've gone through <http://nsns.com/MouseTracks/HallofMalls.html>, you may need to file for a tax extension.

Which is not necessarily a problem if you link to Taxing Times (<http://www.scubed.com:8001/tax/tax.html>). There you'll find a multitude of information regarding U.S. and Canadian taxes, as well as many of the forms themselves, in several different formats. With only a few exceptions, many of these forms are legally acceptable documents.

If you prefer to hang on the fringes, there are plenty of dangling fibers on the Web. Really Different Sites is, well, just that (<http://www.galcit.caltech.edu/~aure/htmls/strangepts.html>). Differently different is the Rumor Mill (<http://www.galcit.caltech.edu/~ta/rmill.html>), with another varied collection of strange stuff linked to more strange stuff with pages full of—alas—yet more strange stuff. The MurpleWeb Weird Stuff page (<http://www.clark.net/pub/murple/weird.html>) should round out your freakish links.

There are so many malls on the Web you might think you're on Long Island.

Perhaps your predilections are niche but not strange. Flip your baseball cap backwards and open up the World-Wide Web of Sports (<http://tnswww.lcs.mit.edu/cgibin/sports>). Still can't get out of that comfortable easy chair? Exchange the remote for a mouse for just a second to access the Ultimate TV List (<http://cinenet.net/UTVL/utvl.html>)

and the Interactive TV Index (<http://cinenet.net/ITVG/itvg.html>). Both are so full of television information you probably won't have any time to watch anything.

Some habits run more visceral than the tube . . . like chocolate. It may not be as sating as the real goo, but the Chocolate Lover's Page (<http://www.ios.com/~shag/chocolate.html>) offers a surprisingly large list of links to chocolate sources on the Net.

Should your vices run deeper than Ho-Hos or if you're interested in hard facts over political mythos, the Drug Information Server (<http://www.paranoid.com/drugs>) is an honest and useful supplier of enlightening information.

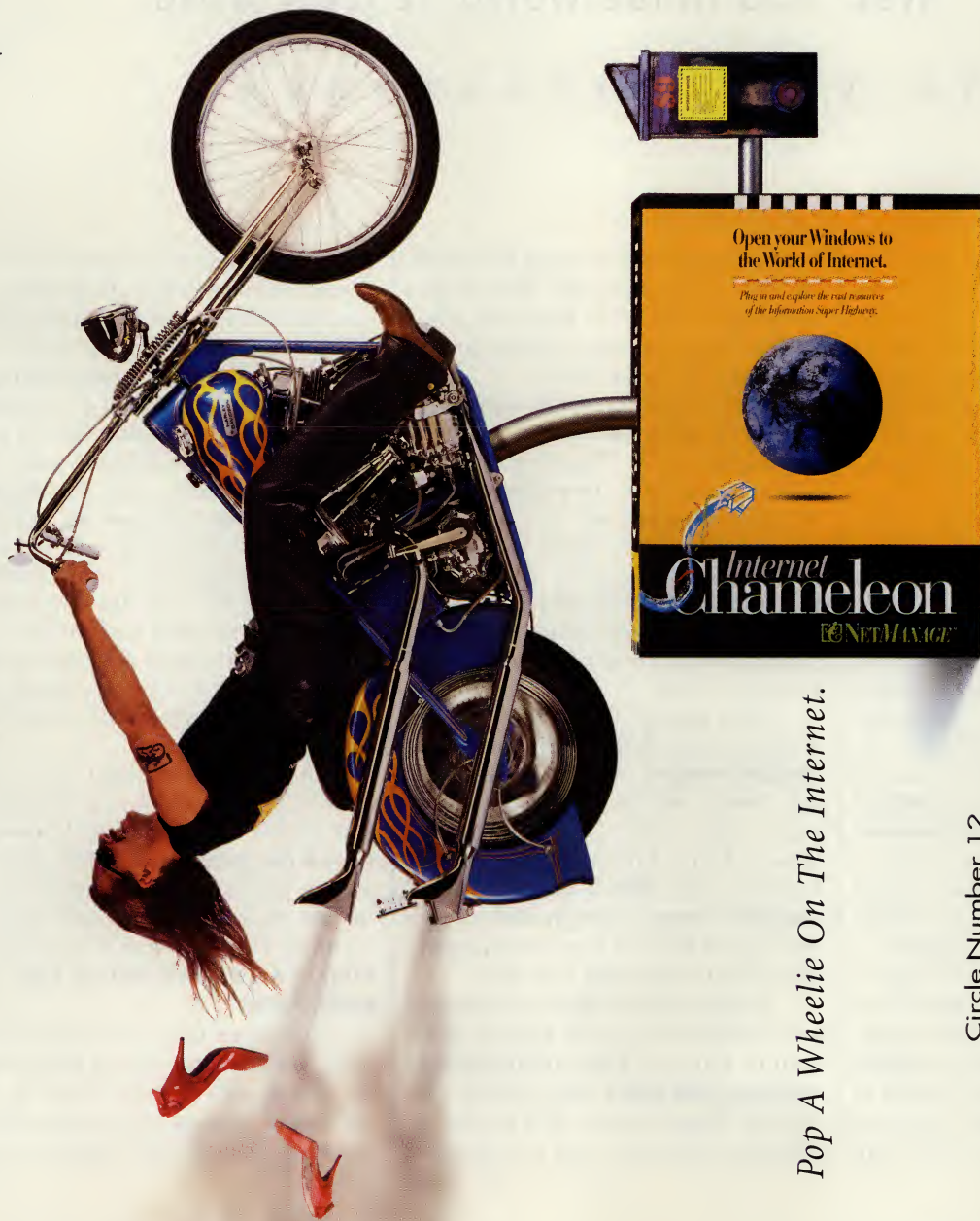
After logging a good deal of Webtime, it might be of interest to read C.J. Silverio's essay about the difficulties he sees in Web-page implementation and execution. He makes several strong points about page design and offers some ideas on how to strengthen the content of the Web through better document planning, layout, and writing. Misleadingly titled "Why the Web Sucks," Silverio's self-described rant can be found at <http://wiretap.spies.com/ceej/Writing/rant.web.html>.

In closing, I would be remiss not to mention the Web site that exemplifies what is, perhaps, the most literal interpretation of this article's title. HOT HOT HOT (<http://www.presence.com/hot>) is for those who think with their tongues. With a huge inventory of international hot sauces, organized by name, heat level, ingredients, and origin, this place is heaven for those who live for searing, semi-paralyzing repasts.

So don't sit there frozen at your monitor because you don't know where to go. Heat up your browser and start cookin' on the Web. ■

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A Walk on the Weird Side

The range of weirdness on the Web, and in the world, is truly wide.

BY ERIC RICHARDSON

Remember when going to midnight movies was just the thing to do when you wanted something *different*? There arose a near fanatic following for those cult movies (*Eraserhead*, *Pink Flamingoes*, and *The Rocky Horror Picture Show*, among others). The problem was you didn't get any sleep that night. But it broke up the monotony and sure was worth it.

A phenomenon similar to midnight movies is occurring on the World-Wide Web, where a multitude of cyber-oddities are springing up. People will mold almost any medium to reflect their personalities, and the Web is no different. The Internet has a history of spawning offbeat fare, particularly among the alt newsgroups (the [alt.tasteless](http://alt.tasteless.nyx10.cs.du.edu:8001/~jnash/alt.tasteless.html) home page is at <http://alt.tasteless.nyx10.cs.du.edu:8001/~jnash/alt.tasteless.html>). People being strange, it's not a shock that some very imaginative pages have opened on the Web that have nothing to do with solving the world's problems.

As you dive into the Web, keep in mind that the Internet as a whole is the single greatest form of free speech on the face of the earth. If you find something that bothers you, simply don't connect to that page anymore. The irony is that for every person disturbed by a site, there

will be another Web-head out there looking for exactly that page. What makes something weird? If at least once while reading a page you make a weird face and say, "What the heck is this?"

From the Gender and Sexuality page (<http://english-server.hss.cmu.edu/Gender.html>) to the Complete Guide to Lock Picking (<http://www.lysator.liu.se/mit-guide/mit-guide.html>), there are some funky things out there. These two sites are examples of the opposite edges of the Web—one page dedicated to the wide range of human sexuality, the other geared toward providing a forum for an unusual, er, skill.

For a taste of the macabre, try the Vampire Index (<http://www.wimsey.com/~bmiddlet/vampyre>), a trove of vampirical data, images, and sounds—an ideal site for those who like a more literal Bloody Mary. Afterwards, fly over to Vampyres Only (<http://www.wimsey.com/~bmiddlet/vampyre/vampyre.html>), with a greeting that bids you join "other Creatures of the Night on the Vorld Vide Veb."

A larger area that delves into the dark side of humanity is the Heather Rose Gothic Page at <http://chico.rice.edu/~busbyhea/gothic.html>. It offers links to sites such as VampLestat's WWW Server, Gateway to Darkness, and the Grotesque

in Art. You surely will appreciate this site if your favorite holiday is Halloween.

For those of the geek persuasion, a Web watering hole is a site called Geek: A Definition (<http://samsara.circus.com/~omni/geek.html>). It offers a convoluted hyperlinked Webster's definition of geek, and the home page informs you: "The unwritten geek credo states that originality and strangeness are good and that blind conformity and stupidity are unforgivable." The page offers other gems of enlightenment—like the differences between a geek and a nerd, which to the unlearned might seem the same, as well as the definition of a hacker. The site also includes an in-depth profile of the Santa Cruz geek social scene.

To quench your thirst for strange knowledge and extend your vocabulary, surf over to Bogosity (<http://www.phil.uni-sb.de/fun/jargon/bogosity.html>). You'll be a better person for it. In a similar vein, a sardonic dictionary of Web terminology is found in The Websurfer's Handbook at <http://www.galcit.caltech.edu/~ta/handbook.html>.

Ever wake up in the middle of the night with fears that you are stranger than the rest of your friends? A way to rate your weird quotient exists on the Web in the Kook Report's How Weird Are You?



(<http://www.nada.kth.se/~nv91-asa/weirdness/weird>). The 20-question test is difficult to get through without laughing, and you might find yourself wondering what is going on in the head of the person who created it. The test is in a multiple-choice format—not that choice is really a word you can apply to it—and includes a scoring key. Following is a sample question:

How do you derive your regular income?

- a) I work in an office. Why?
- b) I get a grant.
- c) I'm on welfare hand-outs.
- d) I deal drugs in Times Square.
- e) My father, who died some years ago, left me an inheritance that produces a modest monthly stipend. It isn't fantastic, but it's more than enough to keep my work going without "dipping into the capital."
- f) Money comes to me as and when I need it. The means varies from day to day. Yesterday, I found N\$3000 (Three Thousand Nigerian Dollars) hidden inside a cat.

Don't try to figure it out. You don't have enough aspirin.

If you're of a megalomaniacal cast of mind (Today the Internet, tomorrow

the world!), you really must stop in at the Fascist Game (<http://wombat.doc.ic.ac.uk/fascist/fascist.html>), a site that proves that he who makes the rules, wins. If you're more inclined towards strange beliefs than world domination, try the Church of the Sub-Genius at <http://www.voicenet.com/voicenet/homepages/SirWill1/slack.html>. The flavor of the site can be gleaned from a quote from the book of the Sub-Genius: "Jehovah is an alien and still threatens the Planet."

Is Barney weird? The site dedicated to the grand purple one certainly is. It seems the dapper dinosaur is being transformed into a cultural icon (scary, isn't it?). Barney's site defies explanation, but it's not for five-year-olds. Check it out for yourself at <http://www.galcit.caltech.edu/~ta/barney> (it's called Yep, It's Barney's Page). Be prepared to chuckle.

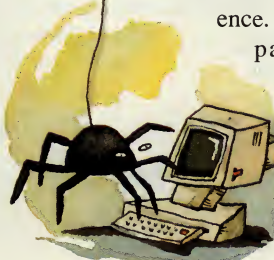
If you think hip is weird, try connecting to *Hip Magazine* (<http://www.hip.com>), the *Rolling Stone* of the Internet. *Hip* is very different and fresh, and the staff does a good job on the many different departments you would expect from any

self-respecting magazine.

How do you go about finding your own odd interests on the Web? My favorite way of finding strange and wacky things is to use the WebCrawler search tool (<http://webcrawler.cs.washington.edu/webcrawler/webquery.html>). Enter a few, choice keywords like "strange," "weird," "odd," and "freaky." Other words that work are people's names because many weird home pages have the creator's name in the title.

Another way of searching—and that is less like finding a needle in a haystack—is to check out different colleges. They generally have great sites anyway; students tend to make some of the most interesting home pages. Here again, look for links in a college's Web pages that are of a person's name.

When you find interesting pages, they often will have links to other pages of interest to a similar target audience. The trick is to find the pages that are mostly links to other pages. Once you find a good master list, you can go from one link to another for days on end.



One of the single best spots to begin your search is the GNN home page at <http://gnn.com/gnn/gnn.html>. Look for the Netizens area, which lists individual home pages.

Another major hub of weird links is Justin's Links from the Underground at <http://raptor.swarthmore.edu/jahall>.

With a greeting that varies but reads along the lines, "When the going gets weird, the weird get going," its categories include Latest Luscious Links and The Weird, the Wild, and the Wonderful on the WWW. In pointing to Dan's Gallery of the Grotesque in its Anarchy/Lawlessness/Tastelessness section, Justin writes, "I know the Web is getting big

Other goodies include links to How to Tell If Your Head's About to Blow Up.

For Barbie-philes, there's the Wonderful World of Barbie at <http://deepthought.armory.com/~zenugirl/barbielingo.html>. If you like tests, there's the 100 Point Purity Test for Non-Virgins (<http://www.circus.com/~omni/purity.html>).

And what could be more enticing than the Puking! site (<http://www.cs.indiana.edu/hyplan/ljray/ralph.txt>), which

when *Internet World* beats me to covering an offbeat site." (See The Surfboard, Feb. 1995 IW.)

Other goodies include links to the Strawberry Pop-Tart Blow-Torches page (<http://www.sci.tamucc.edu/~pmichaud/toast>) and the How to Tell if Your Head's About to Blow Up page (<http://www.mit.edu:8001/people/mkgray/headexplode.html>).

contains an alphabetical listing of synonyms for technicolor yodeling.

Another happy hunting ground for weirdness is the Useless WWW Page (self-billed as "America's Funniest Home Hypermedia") at <http://www.primus.com/staff/paulp/useless.html>, with links to such goodies as the Scratch and Sniff Theater (http://www.erc.msstate.edu/~lush/scratch_n_sniff/index.html), Joe's Couch Rating Chart (<http://www.beckman.uiuc.edu/groups/biss/people/jgross/couches.html>), and the classically useless Astroboy's Yo-Yo Status Server (<ftp://www.neosoft.com/pub/users/a/astroboy/yoyo.html>). Another winner here is the Rectal Foreign Bodies page at <http://www.well.com/www/cynsa/newbutt.html>.

The Web holds a mother lode of wacky pages. But beware. Once you are drawn into the dark recesses of the Web, you very likely will lose your . . . sleep. ■

Eric Richardson (rchenslt@epix.net) is an Internet trainer and freelance writer based in northeastern Pennsylvania.

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Circle Number 72

Culture Cruise

An International Web Site Tour

BY JERI H. DIES

As a teacher of foreign languages, I am continually amazed at (and delighted with) the abundance of resources available on the Internet for people wanting to learn more about other languages and foreign cultures. The Internet and particularly the World-Wide Web offer much for the student and would-be traveler.

If you're searching for French-, Spanish-, or Russian-speaking sites, or perhaps planning to visit Berlin or Tokyo, or are simply curious about the latest issue of *Der Spiegel*, a popular German-language magazine, the Net is the first place you should look. Following are a collection of international Web sites you can visit for your erudition and pleasure.

Language-Learning Resources

A visit to Travelers' Japanese (<http://www.ntt.jp/japan/japanese>) allows you to brush up on a little basic Japanese. If your computer has sound capabilities, you may learn to communicate even better.

German and Russian Resources (<http://www2.uncg.edu/~lxlprc>) is probably the most extensive site for finding resources for learning more about these two languages and cultures.

Foreign Language Resources on the World-Wide Web (<http://www.itp.berkeley.edu/~thorne/HumanResources.html>) is one of the most abundant sources for learning foreign languages on the Internet. The hypertext documents will lead you to many great sites that can help you learn another language or improve your existing foreign language skills.

In addition, an incredibly rich collection of dictionaries, literature, and some tutorials in many modern and archaic languages can be found at <http://www.willamette.edu/~tjones/Language-Page.html>.

French Web Sites

A link to a whole host of French Web servers, in French, is http://parthe.lpthe.jussieu.fr/info_autres_fr.html. From there you can get to museums, universities, and other sites—tourism *sans* headaches.

The Paris site (<http://meteora.ucsd.edu/~norman/paris>) offers you the chance to make a virtual visit to the City of Light. Don't get lost on the metro.

German Web Sites

German News (<http://www.rz.uni-karlsruhe.de/misc/germnews>) is a source of the latest news from Germany in German.

Der Spiegel (<http://www.hamburg.germany.eu.net:80/nda/spiegel>) is a news magazine that takes the pulse of today's Germany.

Spanish-Speaking Web Sites

La Red Científica Peruana—The Peruvian Network Server (<http://www.rcp.net.pe>)—provides a link to many Spanish-speaking sites in Latin America.

All sorts of Spanish-related information—some in English, some not—can be had at <http://gias720.dis.ulpgc.es/spain.html>. It includes links to the Spanish alphabet, maps of Spain and the Canary Islands, and more.

European Web Sites

To learn about more than foreign languages and get a handle on how Internet expansion is progressing in Europe, you may want to check out Welcome to Eurogopher at <http://www.sunet.se/eurogopher/eg.html>.

Searching for International Web Sites

The WebCrawler (<http://webcrawler.cs.washington.edu/WebCrawler/WebQuery.html>) is my tool of choice for searching the World-Wide Web. For those of you familiar with its capabilities, this is no surprise.

If you have international interests, try searching foreign words or phrases with the WebCrawler. For instance, if you are interested in French software concerns, try submitting *logiciel*, the French word for software. You may be surprised at the interesting sites that pop up. To paraphrase one of the most popular modern-day philosophers: The Internet is like many boxes of chocolates; you never really know where you'll end up. ■

Jeri H. Dies, Ph.D. (jdies@cs.fit.edu) teaches foreign languages at the Florida Institute of Technology. Her specialties include the use of technology for language learning and teaching.



URL : <http://www.Iconovex.com/AnchorPage.html>

While everyone agrees that on-line publishing is the wave of the future, the tools used to **create** Internet documents have been mired in the past. Placing **HTML** tags within a document has been an arduous, manual process, until now. Those who surf Web sites have had it no better, wasting lengthy download times on **documents** that prove to be unusable. At last, there is software that allows publishing companies and Internet users to maximize the potential of the World Wide Web. With AnchorPage by Iconovex, you can create HTML tags **automatically**, and those browsing your Web site will navigate through phrases, concepts and abstracts **with** minimal effort. The secret is in Iconovex's proprietary Syntactica technology, an English-language concept recognition system. And AnchorPage is fully compatible with existing browsers and Web servers. **AnchorPage™**: The information management tool of the electronic age. To learn more:

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LATIN AMERICA'S NET PRESENCE IS GROWING.

BY ROSALIND RESNICK

a

fter more than a decade of sluggish growth and soaring inflation, Latin America's economy is bouncing back. Not coincidentally, Latin American information sites on the Internet are flourishing, too. These days, dozens of Gopher and World-Wide Web servers, as well as FTP and telnet sites, are springing up to satisfy the region's thirst for information about everything from the history and geography of specific Latin American nations to regional art and culture to the Summit of the Americas that took place in Miami a few months ago.

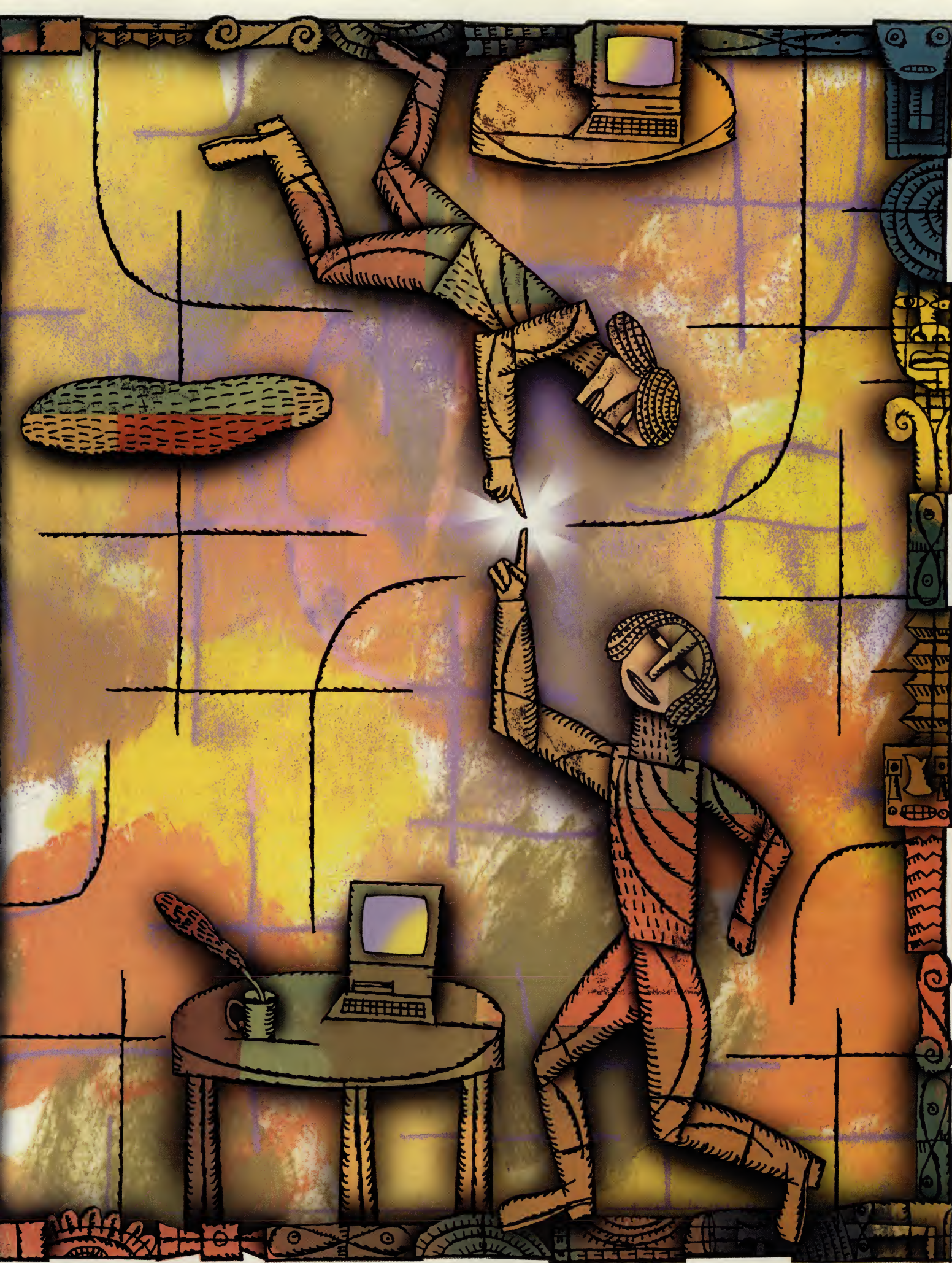
Some of these sites are sponsored by Latin American universities, while others are housed on computers at the University of Texas, the University of California, Florida International University, and other American institutions. Still others are sponsored by travel agencies and other commercial entities.

Thinking about doing business in Argentina but want some background information? The Gopher server operated by Argentina's Red Científica y Tecnología Nacional (RECyT) contains the full text of the country's new constitution, a summary of daily news bulletins, and even a soccer roundup (gopher to gopher.recyt.net).

Want to track developments in Brazil? A Gopher maintained by the Computing Center of the Institute of Physics at University of São Paulo (gopher to bee.cce.usp.br) provides information about the university, a list of Brazilian Internet nodes, and news reports from Brazilian newspapers. (Be aware, however, that much of the information housed on these sites is in Portuguese or Spanish.)

Interestingly, many Internet sites containing information about Latin America are housed on computers in the United States, not in Central and South America. The reason: Despite the rapid growth and Internet access via low-cost networking technologies such as Fidonet, packet radio,

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Circle Number 32

IN MEXICO, MEXNET GIVES FARMERS ACCESS TO PRODUCE PRICES.

UUCP, and low-earth-orbiting satellites, Internet use in the region remains relatively low.

Part of the problem lies with Latin America's weak information infrastructure. For example, in Mexico, a country of more than 100 million people, residents must often wait as long as a year to have a telephone line installed. Brazil, the world's fifth largest country with a population of more than 150 million, enjoys a functional phone and fax network but lags behind in other telecommunications.

Fortunately, these problems aren't likely to last for long. Within the next five years, Mexico, Brazil, and other Latin American countries are expected to upgrade their telecom infrastructure with fiber optics. Currently, Brazil and Mexico each have close to 4,000 registered Internet host computers, according to SRI International. Internet access has even penetrated the Amazon and Tierra del Fuego. What's more, a variety of commercial services are springing up to promote Internet access in the region.

In 1993, the National Science Foundation, which built the NSFnet's backbone in the United States, contracted with Sprint's Government Systems Division to install a dedicated high-capacity gateway to Latin America. Known as the Latin American Internet Exchange, the network has emerged as the region's first full-scale on-ramp to the information highway, providing direct access to the Internet via satellite dishes.

Demand for the new service has been high. According to a recent article in a U.S./Latin trade magazine, institutions in Argentina, Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, and Peru have already signed on.

In Mexico, a network called Mexnet has recently started, enabling Mexican farmers in remote regions to access local and international prices for their produce. In Miami, ITINET, formerly Delphi en Español, is offering Internet access throughout Latin America via Spanish-language menus; ITINET has offices in 11 Latin American countries, including Argentina, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Paraguay, and Venezuela.

Want to find out more about Latin America on the Internet? Here are five sites worth visiting. The best place to start your journey is the University of Texas's Latin America General Information menu on the World-Wide Web (<http://lanic.utexas.edu/la/region.html>). Here you'll find links to a wealth of resources, including the Benson Latin American Collection; Chicano-LatinoNet; the Guide to Internet Resources for Latin American Studies; the Latin American and Caribbean Center at Florida International University in Miami; Latin America and the Caribbean Economic & Social Data gathered by USAID; Latin American Art and Rare Materials; and regional maps.

The University of Texas also hosts a Web page listing most connections to Latin American/Spanish Web and Gopher services. This listing is a compilation of sites located separately via the Web server listing at CERN plus Gopher sites and maps of Chile, Mexico, and Spain. It's at <http://edb518ea.edb.utexas.edu/html/LatinAmerica.html>.

Internet Resources for Latin America is compiled by Molly E. Molloy of New Mexico State University Library in Las Cruces, N. M. This guide is a treasure trove of useful data. The first part contains pointers to Gopher servers, articles, books, electronic files, databases, computer programs, and other Latin American information resources.

The second part of the guide, the "list of lists," contains information about Internet mailing lists and newsgroups pertaining to Latin American topics. Current versions of the guide are available on the UT-LANIC Gopher, the University of Michigan Subject Oriented Guides to the Internet Gopher, the NMSU Library Gopher, and the GNET archive (see sidebar "Latin American Sites").

In preparation for last December's Summit of the Americas, which brought together President Clinton and dozens of Latin leaders for a history-making meeting in Miami, Fla., International University created a Gopher server called SummitNet. The site is the product of a partnership between FIU's Latin American and Caribbean Center, the U.S. Department of State, Sprint International, and Tandem Computer Corp.

Still available to millions of Internet users worldwide, SummitNet contains official documents from all participating governments, position papers and analyses from governmental and non-governmental organizations, schedules, biographies of key personalities, and every *Miami Herald* article written about the event. The site also serves as an unofficial depository for U.S. State Department documents about the region.

Initially set up as a text-based Gopher service (via Gopher at summit.fiu.edu), SummitNet now has a presence on the Web at <http://summit.fiu.edu>. In addition to informational documents, the Web site features photos of Latin American leaders who attended the summit and a picture of Vizcaya, the Renaissance villa where the conference was held.

The Perry-Castaneda Library Map Collection at the University of Texas at Austin holds more than 230,000 maps covering every region of the world. The 50 maps listed on the menu range from individual countries such as Argentina, Belize, El Salvador, and Haiti to regional maps of Central America and the Caribbean, Latin America, and North America. Check out http://www.lib.utexas.edu/Libs/PCL/Map_collection/americas.html.

The handiwork of Dutch graduate student Erik Tjong Kim Sang, Suriname's unofficial home page features a detailed country map, pictures of its flag and crest, and links to the words and score of the former Dutch colony's national anthem. There's also a tourist guide listing hotels and travel agencies, a historical backgrounder, news bulletins from the Suriname Internet News Service (Krant), information about Suriname from *The CIA*

FIND OUT EVERYTHING YOU EVER WANTED TO KNOW ABOUT SURINAME ON THE WEB.

World Factbook, and links to other Web pages about the country.

Where else on the Net can you read all about Anthony Nesty, the only Surinamese Olympic medal winner (he took the gold in the 100-meter butterfly at the 1988 Seoul Olympics) or catch a glimpse of a Kankantri tree? To find out everything you ever wanted to know about Suriname but didn't know whom to ask, go to <http://www.let.rug.nl/~erikt/Suriname>.

Unfortunately, Suriname itself (located in the northern part of South America, pop. 386,372) has no FTP, Gopher, or Web site; all the information on its home page is housed on a

computer in the Netherlands. Even e-mail access is dicey at best.

As interest in Latin American continues to grow, Latin American Internet sites and services will continue to multiply. Whether your attraction to the region is business or pleasure, exports or beaches, there's probably an Internet information site that has what you're looking for. ■

Rosalind Resnick (rosalind@harrison.win.net) is a former Miami Herald business reporter who writes frequently about international trade.

LATiN AMERICAN sites

Sites housing information about Latin America are popping up all over the Internet these days—thanks, in large part, to the efforts of U.S. and Latin American universities.

Here are 12 Latin American information sites recommended by Molly Molloy, author of *Internet Resources for Latin America*.

1) BASE DE DATOS

TROPICAL (gopher to bdt.ftpt.br). Contains local and regional information on biology and biodiversity in Brazil and other tropical regions. Information is in Portuguese and English.

2) CHICANO/LATINONET

(gopher to latino.sscnet.ucla.edu). A clearinghouse for information and Chicano/Latino research at the University of California and elsewhere. Produced by the Chicano Studies Research Center at University of California at Los Angeles.

3) ECUANET

(gopher to ecnet.ec). Launched in May 1993, Ecuador's ECUANET service provides access to library catalogs, Gophers sites, Archie searches, and a variety of Internet services. Also offers the news service *Diario Hoy*, which goes to ECUADOR mailing-list subscribers.

4) FOURTH WORLD

DOCUMENTATION PROJECT: INDIGENOUS PEOPLES INFORMATION FOR THE ONLINE COMMUNITY (accessible via Gopher at fir.cic.net; FTP via ftp.halcyon.com/pub/FWDP or at fir.cic.net/pub/Politics/Fourth.World; and on the WWW at http://history.cc.ukans.edu/history/WWW_history_main.html). A collection of over 300 documents from nations and organizations around

the world relating to indigenous peoples.

Organized by the Center for World Indigenous Studies (CWIS).

5) HANDBOOK OF LATIN AMERICAN STUDIES (accessible via the Library of Congress Gopher—gopher or telnet to locis.loc.gov; or the UT-LANIC Gopher—gopher to lanic.utexas.edu; follow the menus). Contains abstracts and complete bibliographic information for published materials from and about Latin America on a wide range of topics in the humanities and social sciences.

6) INSTITUTE FOR GLOBAL COMMUNICATIONS/IGC (gopher to gopher.igc.apc.org). Provides access to news from the Interpress News Service from Latin America and other regions focusing on peace, human rights, environment, labor, and other social justice issues. A good resource for finding out about conferences, news, and other resources available via the IGC networks.

7) LATIN AMERICAN AND CARIBBEAN CENTER/LACC, FLORIDA INTERNATIONAL UNIVERSITY (gopher to gopher.fiu.edu). Provides excerpts from *Hemispheres* magazine, information on Latin American and Caribbean research at Florida International University, information on trade relations between the southern United States and Latin America, and information on scholarships for Latin American studies.

8) NEW MEXICO STATE UNIVERSITY LIBRARY (gopher to lib.nmsu.edu). Houses the *Internet Resources for*

Latin America guide plus information about the subscription service, Latin America Database; public-access electronic journals relating to the border or Latin America; and postings of news from Internet sources relating to the border and Mexico from August 1994 to the present.

9) PERU'S UNIVERSIDAD DE LIMA GOPHER

(gopher to ulima.edu.pe). Houses a database of information about constitutional law in Peru and other countries. Includes the full-text of constitutions of many countries of the world in Spanish.

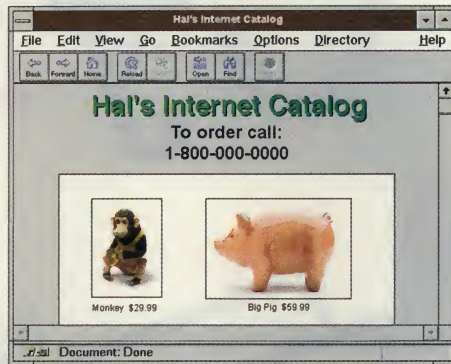
10) RED CIENTÍFICA PERUANA/RCP GOPHER (gopher to chasqui.rcp.net.pe). Contains many useful Internet documents and instructional tools in Spanish plus links to libraries and discussion groups on a variety of topics.

11) USAID LATIN AMERICA & CARIBBEAN ECONOMIC & SOCIAL DATA

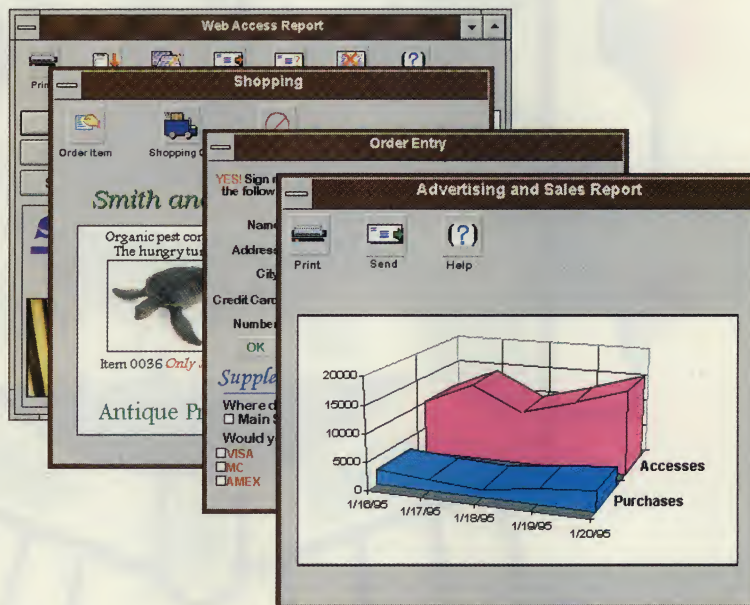
(gopher to lanic.utexas.edu). An excellent source of current statistics covering many economic and social indicators, including education, environment, health, poverty, and trade.

12) UT-LANIC: LATIN AMERICAN NETWORK INFORMATION CENTER (gopher to lanic.utexas.edu). The University of Texas Institute of Latin American Studies Gopher is the primary gateway for Latin American information on the Internet. Provides access to library catalogs, specialized databases, Internet access tools and information, FTP archives, economic/social statistics from Latin America, and much more.

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Circle Number 82

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them is
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Today, people no longer are content simply to view the news on TV or read about it in newspapers. They want customized information—immediately—and they want to ask questions and make comments. Libraries traditionally have filled the need for supplying information, but fact-hungry patrons expect *current* information. The Internet can fulfill many of their needs.

The biggest problem with the Internet is not a lack of information; it's locating the information that causes headaches. The items below will help you get directly to some useful research mate-

rial around rather than spending your time mousing around with no success.

A Small World, After All

It's rare to find a card catalog that will have the most up-to-date list of materials, and flipping through the *Readers' Guide to Periodical Literature*—finding the source, writing it down, sorting through pages, searching for the journal, and then perhaps not even finding it—is a hassle that reminds too many of their high school days. Locating information about international current events

shouldn't be such a chore.

Are you interested in the Summit of the Americas that took place in Miami this past December? The meeting was sparked by the success of the North American Free Trade Agreement, but it became a source of controversy with some countries south of the United States. You could scour old newspaper clippings, but better yet, gopher to summit.fiu.edu to find the latest news articles, government documents, calendars, and daily updates from the meeting.

Instead of spending precious time on hold (if you can even get that far) while

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By Cynthia James-Catalano

attempting to call government officials, you might want to telnet to the SEFLIN Free-net at bcfreenet.seflin.lib.fl.us for information about the Cubans being held at Guantanamo Bay. Log on as **visitor** and sign the guest book. When you get to the main menu, type **Cubans**. It will let you search by name to see if the person you seek is at the military base.

The site also offers information about Cuban culture and a bulletin board to discuss related issues. The board takes postings in English and Spanish, so be prepared with your dictionaries if you want to read everything.

Sorting Out the Pieces

If you have trouble keeping up with the borders and tumult in the former Soviet Union, you're not alone. Even news shows too often use outdated maps to illustrate stories, and announcers, finally trained to say Soviet Union instead of Russia, must get used to referring to Russia and 14 other nations.

To keep track of who's in charge and where in these newly recognized countries, telnet to ukanaix.cc.ukans.edu. This site has information on the former Soviet republics, listing current and former leaders and what they are doing today. It also includes a copy of the Russian constitution and offers a list of related newsgroups and FTP sites.

Focusing on the United States, one of the biggest debates in the country right now is welfare. Lots of people are talking about it, but what if you want the facts? Gopher to spike.acf.dhhs.gov. This is the database for the Administration for Children and Families, under the Department of Health and Human Services. It has descriptions of their programs (Aid to Families with Dependent Children being the one on which most people focus) as well as staff information, press releases, and statistics.

With the Republican resurgence dur-

ing the elections, many voters have become interested in its Contract with America. You can find it and other political documents at the Gopher site toby.scott.nwu.edu. Party platforms, speeches, and other goodies that politico junkies should enjoy abound there.

Online Clinic

If thinking about politics makes your head spin, you might want to gopher over to selway.umn.edu 700. This site was originally established to help students find information they might get from a campus clinic. It has expanded to include sections on health insurance, diets, drug abuse, and recovery from sexual abuse. So if you're worried that you have pinkeye (or maybe just eye strain from staring too long at your computer screen), you can look up the symptoms to make an educated decision. Of course it's not meant to replace a doctor, but there is a wealth of information.

Maybe you just need a trip to get away from it all. Before leaving, look on the World-Wide Web for travel and tourist information at <http://www.digimark.net/rec-travel>, where you'll find just about everything you want to know. Originally an FTP archive for the newsgroup **rec.travel**, this site gives information about all parts of the world. It has travel tips, guides to vegetarian restaurants, online travel agents, and even *The CIA World Factbook*. It also includes the U.S. State Department's Travel Advisories so you can check the safety of a country before going there. If you're only interested in the advisories, they're located at St. Olaf College's system and you can get to them through the Web at <http://www.stolaf.edu> or by gophering to gopher.stolaf.edu.

Wherever you are, if you want to check the weather, telnet to downwind.sprl.umich.edu 3000. You can look up a location by city and state to find out the current weather and the forecast. The site

includes information on earthquakes and hurricanes, too.

To find out how the Earth itself is doing, gopher to envirolink.org, the EnviroLink Network. Run by a non-profit organization, it has information on endangered species, energy, laws, environmental groups, their newsletters, and much more.

Looking past the mundane, to follow the latest shuttle launch (and where it landed) or to look up your favorite astronaut's biography, check out NASA's Spacelink database. You'll find everything from fact sheets to GIFs there. You can get to it in a variety of ways: telnet, FTP, Gopher, or through the WWW. The address is spacelink.msfc.nasa.gov.

Another source of space information is the Gopher site at seds.lpl.arizona.edu. Created by Students for the Exploration and Development of Space (SEDS) to promote space exploration and development, it not only has recent information about celestial events but also tells you how to get involved here on Earth.

Countdown

Finally, if you're curious about how many shopping days are left before Christmas or Chanukah, finger copi@oddjob.uchicago.edu. Craig Copi tells you the date, Greenwich mean time, Roman calendar, Jewish calendar, Chinese year, and moon phase. There's a countdown of days left in the year (calendar of your choice) and a listing of famous events and birthdays that occurred on any date. For sports fans, game schedules also are included.

All these sites will increase your knowledge and give you a chance to interact with others interested in the same topic. Happy hunting! ■

Cynthia James-Catalano (jamcat@gate.net) holds a Master of Science in Library Science and works as an editorial researcher at The Orlando Sentinel.

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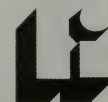
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Running Scared

By Mike Godwin

▼
Carnegie-Mellon University caused an uproar when it banned some Internet newsgroups from its campus.

I have spent a lot of time at universities, and they all operate by adhering pretty closely to the cover-your-assets principle. Pittsburgh's Carnegie-Mellon University (CMU), so far as I can tell, is no exception. And that more than any other single factor explains why CMU's administrators decided, needlessly, to censor Usenet newsgroups.

It all began last November when a researcher named Martin Rimm, who'd been making a study of sexual images on Usenet, told Carnegie-Mellon administrators that among the flood of images that regularly pass through the university's Internet-connected computers were some of the images that had been the basis of the prosecution of system operators Robert and Carleen Thomas in Memphis, Tenn. (see "Law of the Net," March *IW*). Armed with a dim understanding of criminal and First Amendment law, the administrators claim to have concluded that because they had formal knowledge of the presence of the images, they risked criminal liability for carrying sexual material.

So, did they do the logical thing and cancel only the postings of images they knew to be obscene? Hardly. Instead, CMU's vice president for computing affairs, William Arms, simply announced that all newsgroups in the alt.sex hierarchy, all newsgroups that carry sexually oriented pictures, and a few that Arms simply found offensive, like **alt.tasteless**, would be canceled.

Students and many faculty on the campus were outraged—not because they were fans of sexy newsgroups necessarily, but because they resented the idea that CMU had decided to become the arbiter of acceptability for Usenet. Universities around the country watched anxiously to see what precedent CMU, long a major

Internet site, would set.

The students, led by sharp young student-body president Declan McCullagh, quickly organized a media counterattack and on-campus protest, and CMU's administration, now receiving the negative publicity it had hoped to avoid, backed down, at least to some extent. It rescinded the decision to kill the textual newsgroups (*writing* about sex is so rarely prosecuted these days that the risk of obscenity liability is effectively zero) and formed a committee to study the problem.

But was there ever a problem? So far as I can tell, the major problem facing CMU is the paternalism of its administration. Arms, himself no lawyer, nevertheless played one on the Net when he sat down "with the law of Pennsylvania in one hand and a mouse in the other" and decided that not only were countless newsgroups probably obscene as a whole, but that several newsgroups contained material that was too sexually explicit for minors. (There's a Pennsylvania law, similar to laws in other states, that criminalizes the showing of non-obscene but sexually explicit material to individuals who are underage.) It's ironic that Arms, in his newfound passion for protecting CMU's freshman class, was eliminating newsgroups that dealt with safe sex and sex-abuse survivors.

Not that censorship on privately owned Usenet sites is inherently a bad thing. I have no trouble defending the rights of site administrators to make free decisions about what they want to carry. But a university (even a private one) operates under a different moral imperative from most Usenet sites: It has a moral obligation both to tolerate offensive and disturbing content and to defend its tolerance of that kind of content.

This is true whether the content resides in a Usenet posting or in the university library. The very worst thing a university can do is decide to chill freedom of expression simply because it's afraid it will look bad or, worse, face some kind of legal challenge.

Most private universities (take Harvard, for example, or Stanford or MIT) are willing to take principled stands in the face of real threats of censorship. (Even though they occasionally blunder into things like hate-speech codes, the blunders are usually only temporary.) CMU, in contrast, decided to censor its newsgroups solely on the basis of the thin theoretical possibility that there might someday be a civil or criminal legal threat.

Or so it says. I strongly believe that the primary reason CMU took the initial position of banning a broad range of sexually oriented newsgroups is that its administration is embarrassed or offended personally by some of the content. Is this any way to run a university?

But before we get to the heart of what's wrong here, let's take a look at how Carnegie-Mellon characterized the case. In its lengthy official statement, the committee wrote the following:

"Netnews is an informal system for distributing messages across the Internet, which carries millions of bits of information every day. Most universities store (in technical terms, 'mount') much—but not all—of that information on dedicated computers (called 'servers') for some period of time (depending on the material). As new material comes in, the old material cycles out. The amount of material available at any one time depends upon the space reserved for that particular 'newsgroup' or set of electronic bulletin boards.

"The information is so voluminous that it would be impractical to monitor, so universities and others in Pennsylvania have assumed the posture that they are not 'knowing' under the terms of the Pennsylvania statutes on pornography and obscenity. [Note: There is no Pennsylvania statute banning "pornography."]

"Recently the Carnegie-Mellon administration was informed by a student doing research on pornography on the Internet that he would soon publish a report on his work. This report may make it impossible for the university to claim that it was not 'knowing' about sexually explicit bulletin boards and that, therefore, it might be liable under Pennsylvania pornography and obscenity statutes. (The faculty members advising

since mid-November.

"An important factor in considering the matter is that, using computers in computer clusters on the campus, faculty, students, and staff can still access directly from the Internet the material no longer mounted on Carnegie-Mellon [bulletin] boards, as can faculty and staff in their offices.

"The Faculty Senate, the Student Council, and the Staff Council each passed a resolution asking the president to restore the three sets of dropped boards.

"The committee established to make recommendations to the president has been meeting weekly to sharpen the issues, to establish procedures for its operations, and to educate itself on the legal and other matters concerned."



the student on the project were equally concerned).

"The university's Academic Council agreed that the university should not mount bulletin boards which were believed to be against the law. To implement the decision, a member of the administration announced that six sets of [bulletin] boards would be dropped. When the matter came to the president, he directed that the three sets of bulletin boards that carried sexually explicit pictures be dropped and the three sets that contained text be kept for further review; and he appointed a committee made up of officers of the Faculty Senate, the Student Government, and the Staff Council (the president or chair and one other) to make recommendations to him on all six sets.

"That directive was carried out, and the committee has been meeting weekly

This summary of events is self-serving and dishonest on several levels. First of all, it neglects to mention that, for most students, a ban of newsgroups from CMU amounts to an outright ban. It may be trivial for a few students to arrange to get access to banned newsgroups at other sites, but for most students it would require an extra investment of time and money. Not every student can afford to pay for a separate, private account.

Second, it obscures the fact that most of the administrators in question are using the threat of legal liability to cloak their own discomfort with the material. They're desperately afraid of appearing to be bluenoses so they're hoping they can rationalize their desire to ban newsgroups by relying on some tenuous threat of legal liability—this in spite of the fact that no university anywhere has ever been held liable for carrying sexual material on Usenet. Not to mention the fact that universities and libraries are routinely classified as exceptions to obscenity statutes.

Third, the committee doesn't mention that, in response to hearing about obscene images, it initially decided to ban newsgroups that don't carry images at all.

And finally, the administrators are obscuring the fact that the mission of a university is not to avoid risk or offense but to protect freedom of inquiry—even

when that inquiry involves sex. One of the great jokes of the whole CMU situation is that the committee is debating whether sexual material has any place on CMU's computers when the only reason the controversy occurred is that one academic researcher found the images worthy of study.

It's the kind of hypocrisy that inclines a civil liberties advocate like myself to rant and rave. And when McCullagh, the student-body president, invited me to CMU to meet with the administrators and to speak at the anti-censorship rally, rant and rave was precisely what I did. In my speech I explained that my organization, the Electronic Frontier Foundation, stands for the proposition that freedom of speech must be protected, not only in the traditional media of speech, print, and broadcasting, but also in the new medium of computer communications.

The fight at the university was over "the imminent death of academic freedom at CMU." The Internet, I told the students, "holds the promise of being the most democratizing communications medium in the history of the planet and it is vital that we prevent the fearful and the ignorant from attempting to control their access to it."

That was precisely what was happening at Carnegie-Mellon. Further, I said, "There is a strong sense here that merely because you are students and because some of you are minors, CMU must protect you from yourselves. It claims that if it doesn't cut off all access to these newsgroups, for everyone on campus, it will not only risk perverting you by exposing you to sexually oriented materials but it'll also be legally liable.

"Its claims are wrong. First of all, it's not true that the *only* way to prevent minors from having access to this material is to deny *everyone* access to it. It is clear to me that the administrators haven't explored any alternatives other than the most expensive and infeasible."

Moreover, I added that there was little risk, if any, of legal liability for the university for carrying the newsgroups

in question because no one can be presumed to have knowledge of all the content of Net traffic. Without proof of that knowledge, says the Supreme Court, there can be no liability. No university anywhere in the country has ever, at any time, been held liable to any degree for carrying the alt.sex newsgroups.

It also was highly unlikely that 17- and 18-year-old high school graduates were unfamiliar with the types of materials being carried in the newsgroups in question. I warned the students that in its actions CMU was failing to uphold Constitutional rights:

"It has forgotten that the Constitution presumptively protects speech and expression about sexual matters, even when that speech and expression may be offensive.

"It has forgotten that the Constitution does not allow governments to ban sexual expression for adults merely because there is some risk that children may see it.

"It has forgotten that, when it comes to the Bill of Rights, what you don't use, you lose. The First Amendment is a terrible thing to waste."

In closing, I recounted a meeting with a Carnegie-Mellon faculty member, who told me

he was a teacher and admirer of James Joyce's *Ulysses* (also one of my favorite books) and understood the issues raised when someone tries to ban works for obscenity. When I heard this, I felt sad. How could he have missed the lessons we learned in this society when books like *Ulysses*, *Tropic of Cancer*, and *Lolita* were litigated in the courts?

It's easy to say you understand the issue of obscenity because you're willing to defend a book that was vindicated half a century ago. What the professor didn't seem to realize was that *this* fight—the one about online freedom of speech—is the one that matters now.

(Godwin's speech is available in its entirety on MecklerWeb at <http://www.mecklerweb.com>.) ■

Mike Godwin (mnemonic@eff.org) is online counsel for the Electronic Frontier Foundation, a public-interest civil liberties organization based in Washington, D.C.

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Circle Number 54

The Long and Winding Yellow Brick Road

By Jerry Pournelle

▼

There are many obstacles in the path that leads to Internet nirvana. So log on and pay your dues.

You can learn a lot about the Internet in a month, but it won't be enough. I've managed to get connected in two ways: through SprintNet via O'Reilly and Spry's Internet in a Box and via IBM's Net-through-Warp bonus pack.

Both offer good connections. I mildly prefer IBM's—when it's working. In the past week the IBM Net hasn't been at all reliable. I dial up, get a connection, and wait for authentication. And wait, and wait ... and about five minutes later the IBM dialer informs me that it got the wrong responses from the Net and I should check the phone numbers and try again in a few minutes. Needless to say, trying again produces the same result.

When it is working, one problem with IBM's OS/2 Warp software is that it's obsessed with security. You can't even get into the program (much less online) without typing in your password. Like most passwords, it's designed to be impossible to memorize, and unlike the Internet in a Box script, there's no place in the IBM software to record it. The result, at least for me, is that I write the silly thing down—so there's no more security than if I'd used my birthday. So it goes.

Internet in a Box has its peculiarities, too, but at least it's working. And the password algorithm lets you make up one you can remember. Both OS/2 Warp and Internet in a Box give you SLIP connections, and with a U.S. Robotics modem, I get a lock at 14.4 Kbps just about every time.

Once you have an Internet connection,

you have to figure out what to do with it. In my case, I already had e-mail as well as congenial chat groups on Bix (which retains the highest signal-to-noise ratio of any information utility I've yet encountered), so I was looking for something else. I'm not sure I've found it yet.

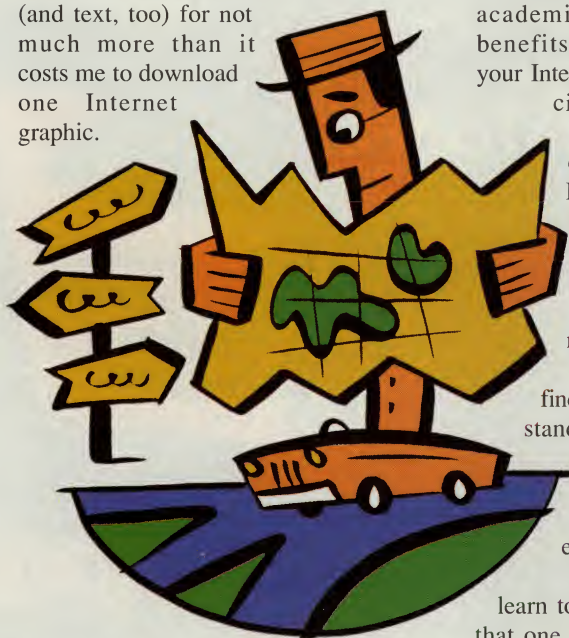
The big problem with the Internet is that unless you have a lot more than a general idea of what you're looking for, you're in for long sessions of drilling down through layer upon layer of menus in hopes of finding something useful or even comprehensible. When you do find an interesting topic, it's likely to take a while. I thought to have a look into one of the more popular newsgroups only to discover that there were over 1,800 current items.

Internet in a Box doesn't tell you how long it will take to download that menu, and after it took nearly a minute to get the first two percent, I gave up and looked for something less popular. After surfing for about an hour—much of which was spent waiting for things to download—I had a lot less information a lot less interestingly presented than I'd have got from any issue of a decent magazine; and all that time the clock was ticking at something like \$9 an hour (I have an ISDN connection). Bix, Delphi, and GENie are cheaper, and all have a higher information density than I've found so far on the Net.

The same is generally true of software: There's a fair amount of shareware and free-ware available on the Internet, but you have to know precisely what you're looking for and how to find it. Bix and GENie have just about all the best of that software and have

much easier-to-use browsing and indexing facilities. Hunting software on the Internet can be fun, but don't expect it to be much cheaper than on commercial information utilities.

Then there's the World-Wide Web, which allows you to look for text and pictures using a graphical interface. It works, too, provided you're patient; once again, it's going to take a while to download much. I can buy a copy of *Astronomy* magazine—or *Playboy*—with dozens of high-quality pictures (and text, too) for not much more than it costs me to download one Internet graphic.



Where's the Beef?

So why is the Internet so popular?

Well, first it's fair to ask, popular with whom? It's easy to be an enthusiast if you have a 100,000-bit-per-second Internet connection, particularly if it's free. My youngest son works for the House Operations Committee in the Capitol, and one of his perks is a T1 connection. When he finds a file on the World-Wide Web, he can instantly view it on his workstation. It's wonderful to watch full-motion video of the DC/X spaceship in flight. It only takes Richard a few seconds to locate the pictures and wham! They're right there on his screen. But I can't do that here. The files are too big to download and keep on my hard disk, and even at 28.8 Kbps they're slow coming and the action isn't very smooth.

Congressional staffers aren't the only ones with that kind of access. Many academic institutions have T1 or better connections for both faculty and students. So do a number of businesses. Speed counts. It's not such dull

work to drill through nine layers of directories only to find there's not much there when the whole operation takes a couple of minutes and costs nothing.

There's another good reason for Internet enthusiasm among academics: It takes place in a collective setting. By far it's easiest to learn your way around the Net by watching someone else do it. Indeed, without help, the Internet is a prime example of Things That Make Us Feel Stupid.

Fortunately, there's a way the non-academic user can get some of the benefits of collective wisdom. Start your Internet experience from a commercial service like Bix or Delphi. (I'm sure there are other good ones; it's just those are the ones I'm familiar with.) You can get acquainted with telnet, FTP, and Gopher and never be far from someone willing to help.

Books are fine, but there's nothing like a helping hand, and sometimes help is a bit hard to find out there in Netland. It's understandable that people with free fast access resent the general public coming into their playground, but it's not much fun when you encounter that resentment.

As to why it's important to learn to navigate the Internet, consider that one of Richard's jobs at the House is to set things up so that all pending legislation, including amendments and House and Senate Conference Committee reports, goes online to the public at the same time that it's available to Congress.

Bismarck said that legislation, like sausages, is best made out of the public view. Perhaps so, but presently we're testing that theory rather severely. You can and should get in on that test no matter what kind of connection you have. It's more fun to drive the Interstate in a Mercedes than in a Ford Escort, but the Escorts have a right to be there. The more of us watching Congress, the less likely there will be, say, another S&L disaster.

I don't have a Mercedes, but I do have the equivalent of a four-wheel-drive pickup truck. Next time, more on what Richard is doing in Washington and an interesting off-road trip. ■

Jerry Pournelle (jerry@bix.com) is a science-fiction and technology writer who contributes regularly to Byte magazine.

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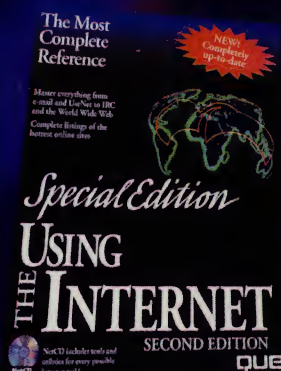
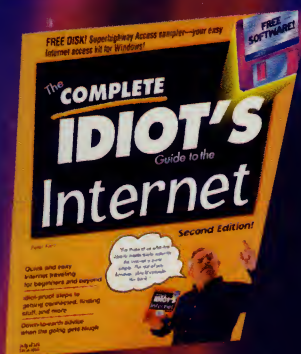
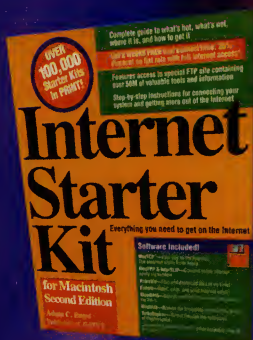
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Bringing Up Baby

By Joel Snyder

Welcome to the world's newest thumb candy, the World-Wide Web (Actually, it's only thumb candy to us PowerBook users, but "index finger candy" doesn't have much of a ring to it.) It's hard not to sound vacuous when writing about the World-Wide Web because so much of the Web is useless self-promotion by individuals and businesses.

Click once to watch a 30-second music video from MTV's band-du-jour? Boy, those little 5MB transfers are sure a great use of scarce resources. There must be *some* gems out there worth clicking on. After all, in December 1994 the monthly NSFnet backbone traffic consumed by WWW users was greater than the *total* NSFnet traffic for January 1994. It can't all be wasted, can it?

Perhaps not. We do have a long way to go and there is some hope. The Web is still a baby, perhaps even as advanced as a toddler. My three-year-old niece Samantha has a lot in common with the Web: egregiously self-centered, prone to tantrums, incapable of admitting error, and preoccupied with form over content. Watching her change clothes three times on Christmas day showed striking similarities to those up-and-coming Web authors who change their home page daily with a frenetic "What's New" section announcing each microscopic update. As Samantha grows up, hopefully the Web will follow.

Another parallel with babies: the Web's immature skeleton. The technologies that make up the Web's infrastructure—HTML (Hypertext Markup Language), HTTP (Hypertext Transfer Protocol), and URLs (Uniform Resource

Locators)—form a precarious house of cards. A great deal of concentrated effort will be required to harden their soft spots and make them strong enough to reach adolescence. We'll leave this maturation to the tech-gnomes. The Web may be shaky, but we do have enough of an infrastructure on which to drape some content, and content is what we need to start concentrating on.

Grow Up!

To improve content, work must be done in two areas: applications and links. There are a small number of good applications running on the Web (send me e-mail if you think you know of a really good one). My favorite (and not just because I helped create it) is the legislative information system of the California State Senate (<http://www.sen.ca.gov>). These folks don't care about the pabulum you get from Bill Clinton (<http://www.whitehouse.gov>) or the raw data available from the Federal Register (telnet to locis.loc.gov). They are sincerely interested in helping people participate in the legislative process.

Use this legislation information-filled Web page to search for pending bills on a particular topic. When you find one of interest, you can view it in a useful way (with strikeouts and underlines to show what's being proposed) and see the complete picture: current status, history, votes, committee, and legislative counsel analyses. Then, you can leave your e-mail address and be notified every time something changes in the status of the bill.

Want to provide feedback? The Senate e-mail system is also linked to the Internet. It involves complex database operations on gigabytes of data and it

Still in its infancy, the World-Wide Web requires proper guidance and nurturing to achieve its full potential.

Internet Security Firewalls Tutorial



Are you sure your Internet connection is as safe and secure as it could be?

Whether you're already connected to the Internet, or still thinking about it, you're probably worried about security—how to take advantage of the Internet's services without exposing your site to intruders. This one-day tutorial by Internet security expert Brent Chapman (manager of the "Firewalls" Internet mailing list) teaches you about the risks and how to build an effective and economical firewall between your site and the Internet.

Contact us for more information about public and private presentations of the tutorial.

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Hypertext links are another major source of content on the Web, which, after all, was originally planned as a hypertext system. In theory, you can click from caffeine to Marilyn Monroe with only brief stops at Joe DiMaggio and *Some Like It Hot*. The hypertext links between documents are the key to realizing the power of the Web.

If your main surf system means constantly bouncing back and forth between one of the Web indices (try <http://home.mcom.com/home/internet-search.html> or <http://cui.www.unige.ch/metaindex.html> to get started) and some random page, you're not getting the point. Rather, whomever is providing the information you're using isn't getting the point. The power of the Web, the real chance it has to go from thumb candy to useful tool, is locked in the links between pages.

We're All Connected

Bill McHenry and Kevin Lynch, two of the most brilliant researchers working in the area of MIS (management information systems), started wondering about this problem in the late 1980s when they asked, "How do we link intelligently?"

In answering this question, McHenry and Lynch described two successful techniques—and if we learn from their work, we can build a better Web. The first technique is the most obvious: Experts who know the knowledge base spend lots of time making the links manually. They know the sources; they know the information; they know each other; and they use all of this knowledge to build intelligent hypertext links. The world of the Internet is filled by those researchers who spend the time making subject-oriented indices to Internet resources. We need a lot more of this brute-force work, and we need to find ways of helping folks who do this work do a better job.

One important way of solving this problem is by freeing Internet information providers from the bounds of HTML. Information providers need to be given tools that let them think conceptually, drawing links between bits of information flotsam and jetsam and building structures that represent their knowledge. Few tools



of this type have been written, unfortunately, and none of them work with the Web. We need to encourage a lot more work on this if we want a better Web.

The second technique for making intelligent links depends on lots and lots of CPU cycles. Basically, you grind up all of the data and seek out relationships based on matching concepts, not just matching words. This is a powerful system.

To use this technique, however, you've got to have a lot of data to munch on. The Internet culture makes this a problem. People who have volumes of data to contribute to the Web usually aren't willing to form consortia to combine the data so that it can be properly indexed. Because half the reason we see data on the Web is to serve as an ego boost for the information provider, anything that dilutes this gratification is going to face an uphill battle.

How can we improve this? I suspect that money would be an effective lubricant. However the idea of paying for the improved information runs counter to the current trend of development on the Internet. This is a good place for the government to move its Internet dollars—into improving content—since private industry is ready to pick up all the cost for the bandwidth. Do your part. Give a hoot and don't pollute. Work on building better applications and links to make this the glory of the Internet. ■

Joel Snyder (jms@opus1.com) is a senior partner at Opus One, specializing in telecommunications and information technology.

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Home Improvement

By *Kenny Greenberg*

There are a host of features you can use to embellish your basic home page.

Last month, we looked at the basic structure of the Web home page and explored the simple programming language that turns a document into a hypertext page. Hypertext Markup Language (HTML) is the set of special tags that allows you to dictate effects such as bolding and italics on a Web page (for detailed information on HTML, see <http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html>), and, most importantly, it can mark a phrase that becomes a selectable or clickable spot on your page linked to another document or application. But HTML can do much more. A host of desktop publishing features—such as lists, bullets, underlines, and formatted tables, to name a few—are available.

Most anyone with a standard Unix shell account can write HTML (it's a simple ASCII text file with some special symbols) and then test it with Lynx or another non-graphical browser. To fully appreciate the impact of graphical presentation, a graphical browser, such as SlipKnot from your shell account or any of the various browsers such as Mosaic or Netscape from a SLIP/PPP or direct connection, is preferred. To write a world-browsable home page, you must either have an account on a system that offers Web space to its users or have a server of your own connected to the Net.

Take Me Home

Let's first look at the most basic form of presentation on a Web home page. Suppose I want to create a résumé that has a bit more than the usual brief listing of accomplishments. I could, for example, use HTML to place tags around my job title at Widgets Inc., and if the reader chooses to click on that phrase, a new page would appear with a more detailed description of my role as head of the

Widgets department of gizmo research.

The statement in HTML might look something like this: ` Gizmo Research`, where "Gizmo Research" is the clickable phrase. Of course, I would create still more hypertext tags on this page that linked to other documents. The reader could click on Gizmo Products and a list of Gizmo products and the company's walloping financial success would follow. Clicking back to the résumé home page, the reader would be free to make choices as to what area and what level might be interesting to try next. Thus, the résumé is clear and succinct, yet beneath its surface is a wealth of information.

Now let's say you're a clothing designer and would like to display pictures of your work on your home page. The `IMG SRC` tag allows you to place an image in your document. The HTML statement would be: ``.

The image file, generally a GIF file, can be either an inline image or an external one. An inline image is a graphic that is actually on the page. There are choices as to where the image is placed and whether surrounding text is aligned with the image's top, middle, or bottom. A graphical browser such as Mosaic is necessary to view the image, and, thus, an additional tag, `ALT=`, is provided. It allows the name of the image to be displayed by non-graphical browsers or browsers where graphics are turned off.

External images can exist in one of many formats and can be downloaded by a non-graphical browser. A graphical browser uses an external program such as lview (or any graphic-viewing package you configure) to view the image.

The images discussed above are passive. It is possible to have more fun and add more

interest with active or clickable images. By using the **IMG SRC** tag with a standard URL (Uniform Resource Locator or the address of the link to which you are pointing), the image takes the place of a hypertext-highlighted phrase and acts as the trigger to the link. In HTML this would simply be: Click here<**AHREF="Fall/Coats/Describe.html">**.

Active images can be small, low-resolution, minimal-color thumbnail images. Rather than inflicting several 200K or more of graphical files on the reader, a simpler low-overhead preview catalog is displayed. Each thumbnail might only occupy 5K or 10K, making your presentation far more tolerable to the reader.

Another nice feature of HTML active-image processing is the mappable image. Here, one large image has several active zones within it, which act as independent hypertext links. Once you know the coordinates that define the size of the image, it is possible to specify rectangles, circles, or polygons at particular locations and of particular size on the image. In effect, you are transparently superimposing these shapes onto the image. Clicking on the active invisible shapes triggers the hypertext action.

Movies in MPEG, AVI, and QuickTime format can be served by HTML as well. Movie files are played by a browser in much the same way as external images; the main difference is the huge size of digital movies. A non-graphical Web browser will download a movie file and a graphical browser will call an external movie-player program to display it. In both cases, you must have the proper player for the file format (see "Files Come in Flavors," March *IW*) on your system.

When you select a movie, the player software—QuickTime, for example—pops up over the browsing application. You then click on the play button to view the video. It is possible to play the movie again and again or save it for future play. You must then return to the browser.

To link to a movie file in HTML, simply reference it by path and name just as you would link to any other file. Sound files (generally in .au format, although any format is acceptable as long as the proper player on the other end is

available) are called up by the hypertext link in exactly the same way.

Putting all of the above together, you begin to see that a sophisticated presentation can be created simply. Keep in mind that an HTML file is merely a text file with special markers before and after any point in the text that you wish to place your link. The link is nothing more than the name of another text, graphic, sound, or movie file on your system or on a remote system to which you connect via a proper Internet address.

If you have advanced skills, the file can even be an executable program written in any number of languages,

machine or account can be duplicated on your own box.

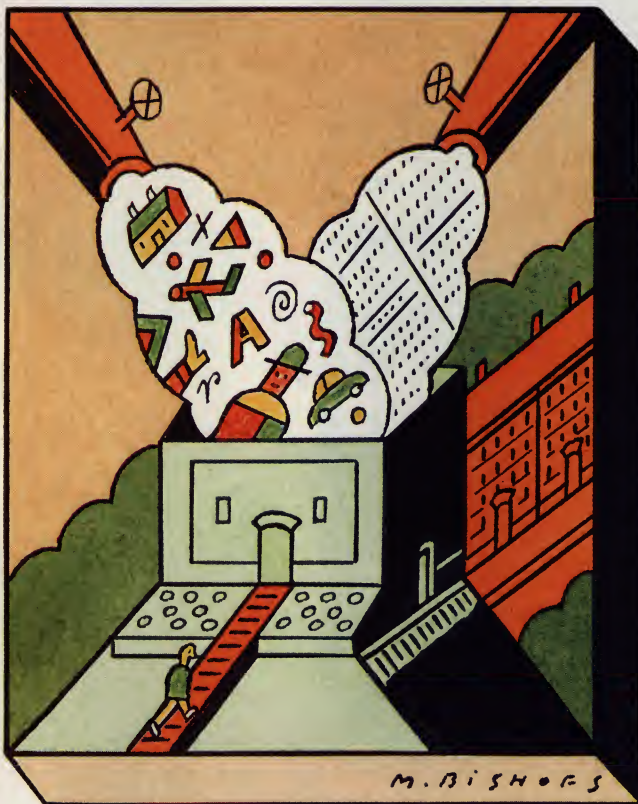
It is not even necessary to convert the Unix forward slash to a DOS backslash; even references to remote files or services are escaped from gracefully. The beauty of this feature is not only that you can pretest presentations that you intend to place online and that your preview is at the full speed of your machine's processor rather than the modem connection speed, but that it's also possible to create presentations for offline viewing. My experience has shown that although this method lacks pizzazz and effects such as flying titles that you might find in advanced presentation software, it is nonetheless a quick, easy, and reliable way to create fairly universally viewable presentations that will run on any platform.

What I like best about this method of creating interactive presentations is their instant portability to the Internet. The presentation you create locally will run globally.

Very recently, I've begun to work with forms. HTML includes a protocol for creating fill-out forms with selection boxes, radio buttons, and other nifty features. The forms are displayed to the user who has proper browsing software; they are filled in and sent back to the server for processing. Before my e-mail box gets crammed with requests for how this is done, let me warn you that although creating a form is simple, processing them definitely is not. I mention forms as an example of the many features available to the HTML author.

The next version of HTML will bring new features as well as enhancements for existing ones. With a bit of patience and careful reading of the documentation and examples found online, you can begin to put together professional presentations for pleasure and business. Although there are software packages emerging that are designed to do all this work for you, you most likely will achieve a far greater understanding—and therefore better abilities—if you try to learn HTML manually now. ■

Kenny Greenberg (kgreenb@panix.com) is a neon artist and owner of Krypton Neon in Long Island City, N.Y.



including shell scripts. When you add images, movies, and sounds to your home-page documents, they become user-directed and, therefore, truly interactive multimedia presentations.

Better Browsing

There's an extra bonus in all of this. Most browsers intended for Internet surfing can display HTML pages offline as well. By simply telling the browser that you are loading a local page, it will look on your own computer's directories for the requested files. With the exception of files or applications that are on remote hosts (FTP, telnet, etc.), the exact directory structure that exists on the Web server

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Circle Number 24

Have I Got a Deal for You

By Linda J. Engelman

A funny thing happened on the way to this month's column. I was attending the monthly board of director's meeting of a local non-profit organization, and about mid-way through the meeting, someone mentioned that it might be wise for the organization to get Internet access.

Of course my ears perked up immediately. (I had been falling asleep on a desk until that point.) "Yes!" I jumped. "That would be a great idea! You can use the Internet to post information about the group. You can use it to gain community support. You can even use it to look for volunteers for some of our upcoming events."

"Hold on a minute," someone interrupted. "I wouldn't accept volunteers from the Internet."

"Why not?" I asked.

"Well, I don't know much about the Internet, but isn't it just a place where lots of weirdos hang out?"

"Hmmm, true," someone else mumbled.

I couldn't believe what I was hearing. Were they serious? Is that how a lot of people perceive the Net? I guess I'm so involved that I sometimes don't realize how much of a mystery the Internet remains to many non-users. Suddenly I found myself defending the Net.

"You don't understand," I explained. "Everybody is on the Internet. It's the future of communication. It's an excellent resource for this group."

"How much does it cost?" someone asked.

"It's cheap," I responded. "And besides that, with all of the potential it holds, how can this group afford *not* to be on the Internet?" I sounded like a used car salesman. Blech.

Much as I hated the way I came across, my sales pitch worked. By the time this column hits the newsstands, another handful of new users will have moved into cyberspace. They'll be happy there, I'm sure, and

hopefully they'll avoid the weirdos.

I bring up this story not only because it's amusing, but because I know there are lots of you trying to "sell" friends, family, and colleagues on the benefits of the Net. And I'm sure you're finding out, as I did, that a lot of people still have their reservations about who and what is out there in cyberspace.

If you're really going to convince them, what you need are lists and lists of all of the treasures and tidbits the Net has to offer. There's got to be something for the kids, your grandmother, co-workers—well, you get the idea. If you're going to get them to sign on the dotted line, you need ammunition! I've tried to keep this need in mind while writing this month's column, hopeful that you'll find at least a few items here to help you convince your co-workers and clinch the deal! So grab your notepad and let's go....

School Daze

In a quandary about how you're going to afford another semester? Don't despair. You knew that having Internet access would pay off some day, and now that day has arrived. Use your Web browser and head immediately to the online financial aid information page. This site is exceptional, offering information on scholarships, fellowships, and grants plus links to lots of other monetary sources.

For example, there are links that take you to various university financial aid offices and to free documents that can be downloaded and printed to a PostScript printer. You'll find specific information on educational funding for women, minorities, and graduate students.

There is one annoyance about this site—its URL address is so long you just might want to forget about college altogether by the time you get to the information. However, if you can get past that little hurdle, you'll find it

▼

Selling the Internet to some people can be as difficult as bringing sight to the blind.

to be a very worthwhile stop along your Net journey. Here it is: <http://www.cs.cmu.edu:8001/afs/cs/user/mkant/Public/FinAid/finaid.html>. (Whew!)

Choo-Choo!

If you're into model railroads, collecting train sets, and building your own tracks, hop aboard this World-Wide Web site. The Atlas Model Railroad Company is online hoping to sell its books and products, but it also puts out a lot of free information for Internet users. Be sure to read some of the company's book excerpts for useful tips on wiring, laying tracks, building scenery, and selecting trains. Or browse through a beginner's glossary of model railroading terms.

Starting at <http://www.atlasrr.com/atlasrr> will put you on the right track. For even more information on this popular hobby, check out the newsgroup **rec.models.railroad**. There you can ask model-railroad questions on everything from construction techniques to painting miniatures to repairing and maintaining cars and locomotives. The three-part FAQ file is posted monthly to the group as well as to **rec.answers** and **news.answers**. It's also available via FTP from rtfm.mit.edu/pub/usenet-by-group/rec.models.railroad. Full steam ahead!

This Could Happen to You

Who's buying what? Who's ripping off whom? What's to be found in the fine print? If you're a consumer and you've had a shopping experience that left a bad taste in your mouth, your story is wanted in **alt.consumers.experiences**.

What kind of experience qualifies you to post to this newsgroup? Well, say you bought a new stereo only to find that the warranty had run out just yesterday. Or maybe you got a postcard in the mail informing you that you had won a trip to the Caribbean and you later found out that the Caribbean was the name of a new fast-food drive-through that's opening down the street.

Get the idea? **Alt.consumers.experiences** really is a mixed-bag kind of newsgroup. There are postings about telemarketers, warranties, faulty products, credit-card offers, shopping encounters, and lots more.

It's not only interesting to hear about other people's experiences (or, in many cases, their nightmares), it's also a surefire way to keep from making the same mistakes. Load up your news-reader and join the fun!

No Place Like Home

I almost hate to divulge this one. It's already such a popular place that you can rarely get a connection. But it's too good to keep to myself, so here it is—the HouseNet BBS.

Accessible by telnet and filled with everything you could ever want to know about your house, HouseNet is a bulletin board system run by Gene and Katie Hamilton, who have been remodeling houses and writing about it for 25 years. The Hamiltons say their bulletin board is intended as a forum for the ongoing exchange of information about houses.

On HouseNet, you'll find more than 2,800 files on home repair and maintenance. Download any of them and read at your leisure. The system operators ask only that you kindly upload one file for every 10 that you download.

Some of the files you'll find? Remove a Tree Stump; Seed a Lawn; Install a New Roof; Replace a Garage Door; Repair a Broken Window; Hang Track Lights; and Install a Ceiling Fan. You also can search topics by keyword.

HouseNet offers more than just files. There are conference areas, similar to Usenet newsgroups, where you'll find messages on a diverse range of topics. You can also chat with other users online and read bulletins and newsletters. To get to this site, telnet to **housenet.com**. You'll be asked to fill out a short questionnaire on your first visit to the board and then you get immediate access.

Keep in mind, this busy address is hard to reach at times. Don't give up! It's worth the effort! When you see the word "ringing" on your screen, you'll know you've gotten through.

Push Cap and Turn Clockwise

Before you swallow another prescribed medication, take a peek into the world of Physicians' GenRx International. GenRx

came online a few months ago, bringing a wealth of prescription-drug information to consumers. While the system is great for physicians, it's also an interesting resource for lay people who want to know more about what they're taking, what the long-term side effects might be, and what type of interactions might occur when the medications are mixed with other drugs.

Drug information can be accessed by generic name, brand name, or category. The company claims that the database is updated quarterly so that all information is accurate. Obviously, you should only use this database as an information resource and not as a substitute for a doctor's recommendations.

There is one catch, however. While GenRx offers certain information for free—such as basic info about a drug—you have to pay a fee for more detailed information—for drug interaction data, for example. A one-month trial is \$9.95, and you can subscribe for three months, six months, or a year. There is a one-time setup fee of \$9.95.

To try out the system at no charge, telnet to **genrx.icsi.net**. Your initial login name and password are both **genrx**. Select your terminal emulation and then sign on as a guest. GenRx is a menu-driven system that is easy to follow.

A word of caution in using the system: You'll be tempted to use your arrow keys to scroll up and down the menu options. Don't! For some odd reason, touching an arrow key immediately boots you off the system. Instead, use the U and D keys to move up or down the list of drugs.

The Mortgage Calculator

Thinking about buying a home? Want to determine what you can afford and what you can only dream of buying? Want to be sickened by seeing how much of your monthly payments for the next 10 years are going to go toward interest rather than principal?



If so, the Mortgage Calculator is an exceptional Net goody that should definitely be listed as a bookmark in your Web browser. First, head to <http://ibc.wustl.edu/mort.html>, then fill out the provided form. You'll be asked for the amount of principal, the interest rate, the term (5-, 10-, 20-, 30-year, etc.), and a start date. Then choose whether or not you'd like to see a full amortization table. That's it. Select **Mortgage Calculate** and wait for the system to do its thing.

Within a couple of seconds, you'll receive a summary or detailed amortization table, depending on which you requested. At the bottom of all the data, you get a calculation that tells you what your income would have to be to qualify for the particular mortgage you specified. Then you're ready to fill out those applications.

Kudos to Hugh Chou of the Washington University Institute for Biomedical Computing for creating such a useful and interesting Net gadget!

Ask a Geologist

Admit it—you were just sitting there thinking, "I wonder how many different

types of rocks lie below the earth's crust."

It's one of the questions that have been nagging you all your life, isn't it? Well now you can get the answer to this and other rock-related questions from Ask-A-Geologist, a service provided by the United States Geological Survey.

Find out why California has so many earthquakes or where the deepest canyon in the United States is located. Expert advice is just a stone's throw away.

Here's how it works: E-mail your earth-science-related questions to ask-a-geologist@octopus.wr.usgs.gov. Your mail will be routed to the "geologist of the day," who will review your question and send you an electronic reply.

The reply will contain an answer or referral to other resources. All questions and answers are made part of a public record and will shortly be available via anonymous FTP and on the World-Wide Web. Ask-A-Geologist claims to respond to most inquiries within a couple of days.

Head for the Launchpad

A lot of us take for granted that we can access thousands of Usenet newsgroups, but at many sites this just isn't possible.

Imagine the frustration of hearing about a "great new newsgroup" and not being able to get it on your system.

If you're a user at a site that offers limited Usenet access, here's something you should know about. All you have to do is telnet to a site called **launchpad.unc.edu**. Once there, you're assigned an address and password and given full access to bazillions of Usenet newsgroups. You can choose from two newsreaders, **rn** and **trn**.

As a launchpad user, you get a .newsr file (having nothing to do with the .newsr file on your own system) that allows you to subscribe and unsubscribe to newsgroups, post news, reply to individual users, and download articles (just as you would at your own host site). From launchpad, you can also send e-mail, connect to Gopher and Lynx clients, and access WAIS servers. This site has been a secret for too long. Spread the word!

Mommy, Tell Me Another Story

"Once upon a time, there was a poor widow who lived with her son Jack in a little house."

So begins the tale of *Jack and the Beanstalk*. Ah, yes, a walk down memory lane. You're laying on your bed, curled under the blankets, teddy bear hugged tight, and so-o-o-o sleepy. Mom barely finishes the last page and soon you're off to never-never land. Kind of brings a tear to the eye, doesn't it?

Revisit those happily-ever-after days—without heading to the bookstore or local library, shelling out a penny, or even getting up from your chair. All your favorite fairy tales are online and just begging to be pulled up on your screen. Kick back and cuddle up with that keyboard as you ftp to [info.umd.edu](ftp://info.umd.edu) and cd to **/inforM/Educational_Resources/ReadingRoom/Fiction/FairyTales**.

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Linda Engelman (lindae@netcom.com) is a freelance writer in Sunnyvale, Calif.

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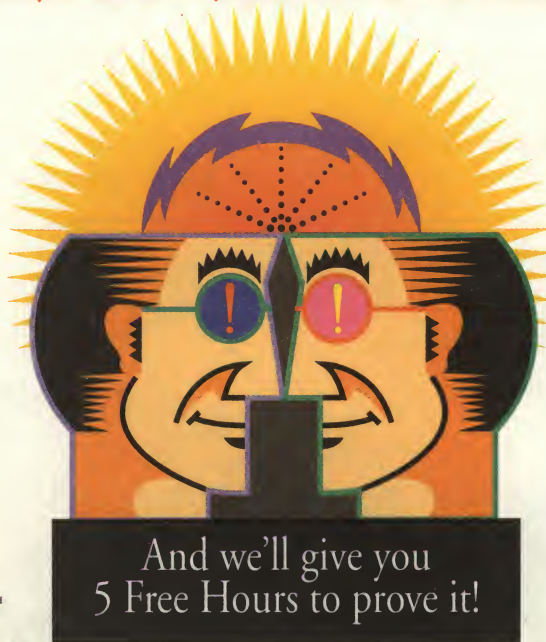
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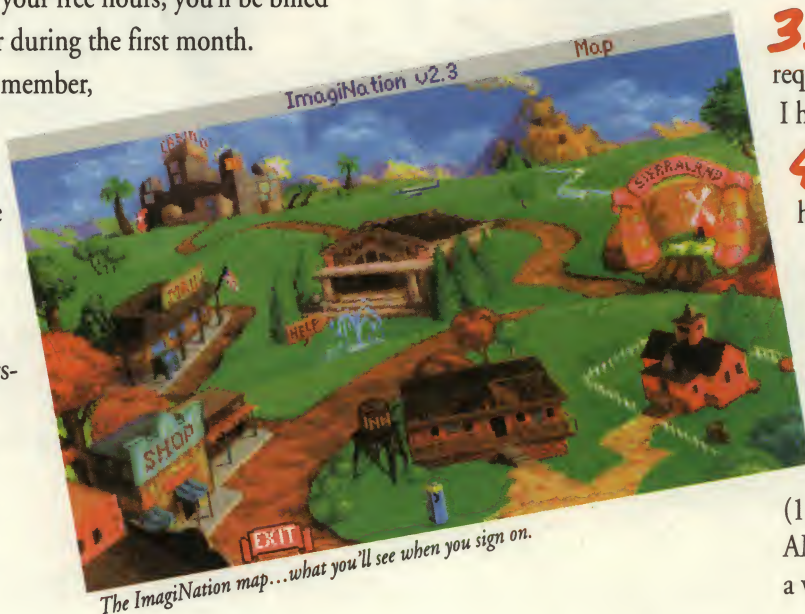
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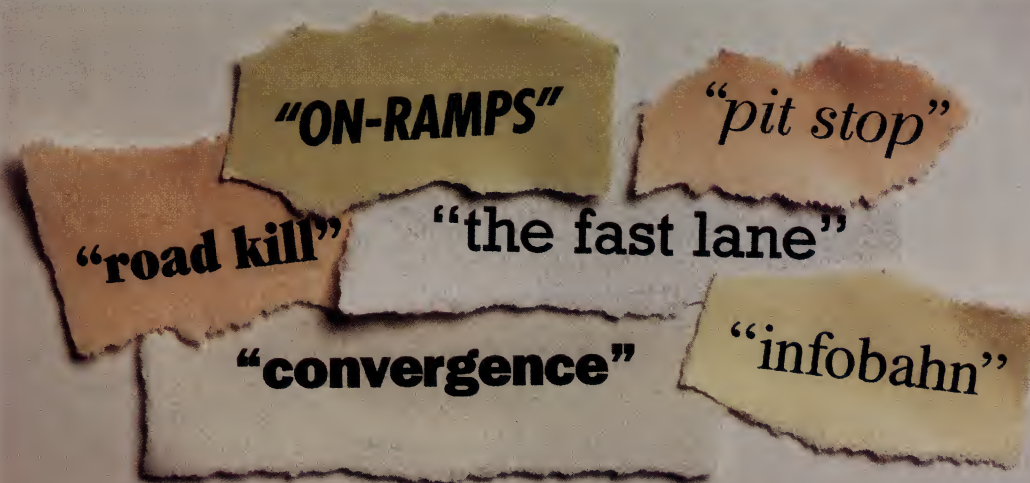


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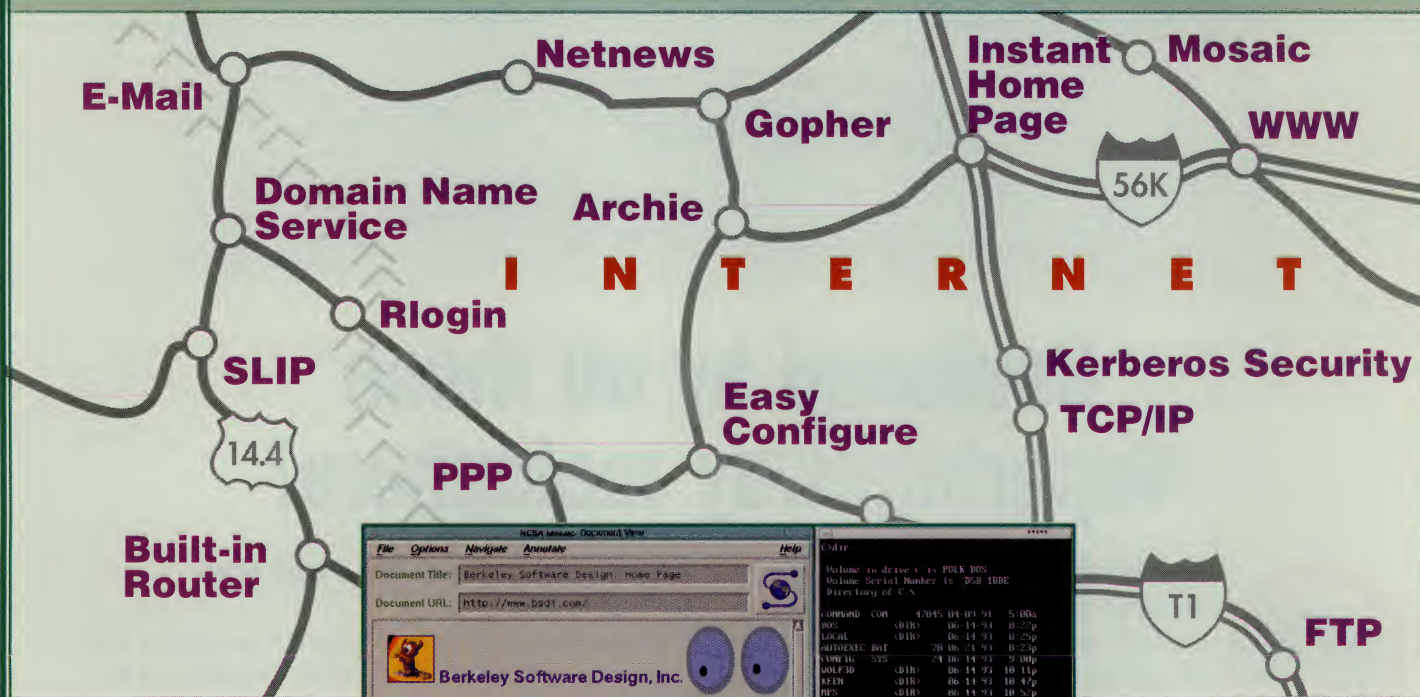
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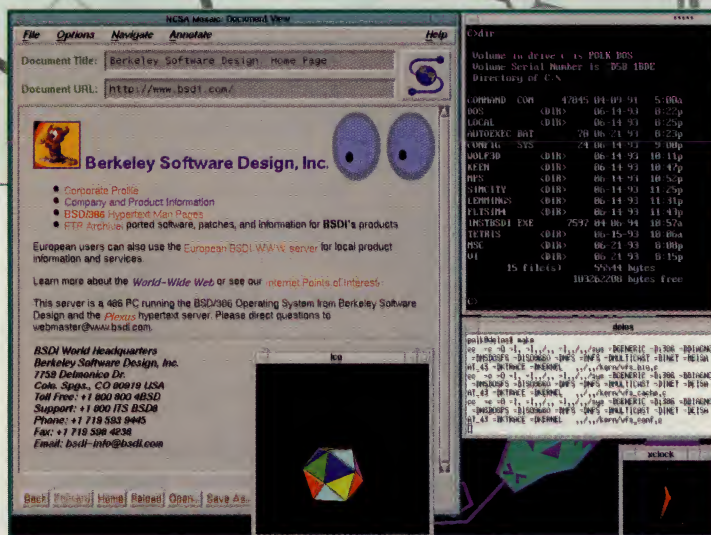


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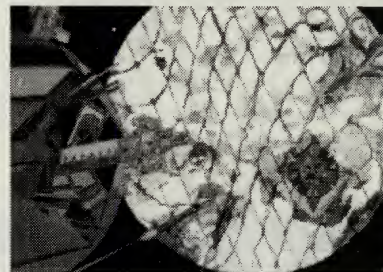
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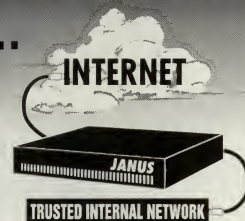
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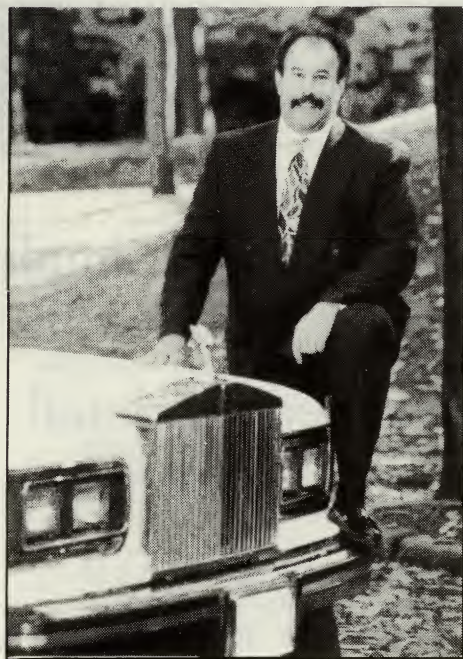
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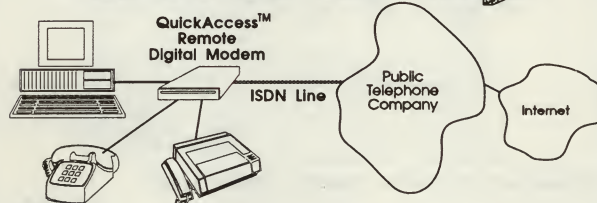
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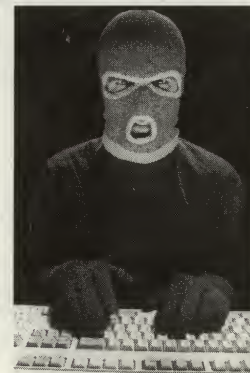
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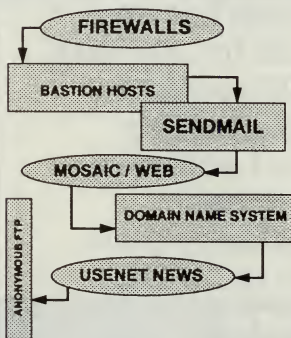
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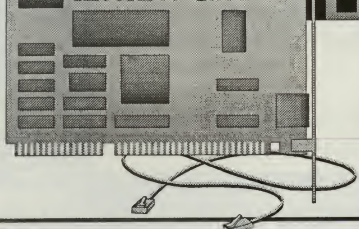
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For those willing to spend a little money, Destiny Starworks, "Computer astrology for the 21st century," offers astrological readings in various detail for \$12 to \$36 at **http://www.tq.com/destiny_starworks/destiny_starworks_home.html**. (You can write to them at **fburke@tq.com**.)

Spirit-WWW, "A snapshot of spiritual consciousness on [the] World-Wide Web," is full of links to things like astrology, channeling, alternative healing methods, reincarnation, and the like. At **http://www.protree.com/Spirit.html** its astrology section contains all sorts of astral information, including a brief history of the craft and an interactive chart.

Finally, some interesting astrological-esque quotes are available at **http://meta.stanford.edu/Quotes/astrology.wierd** (yes, it is misspelled). ■





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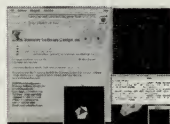
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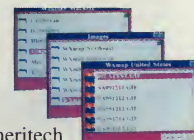
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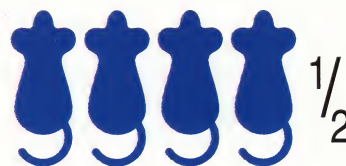
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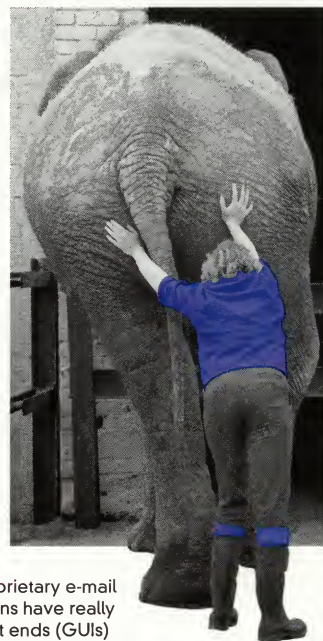


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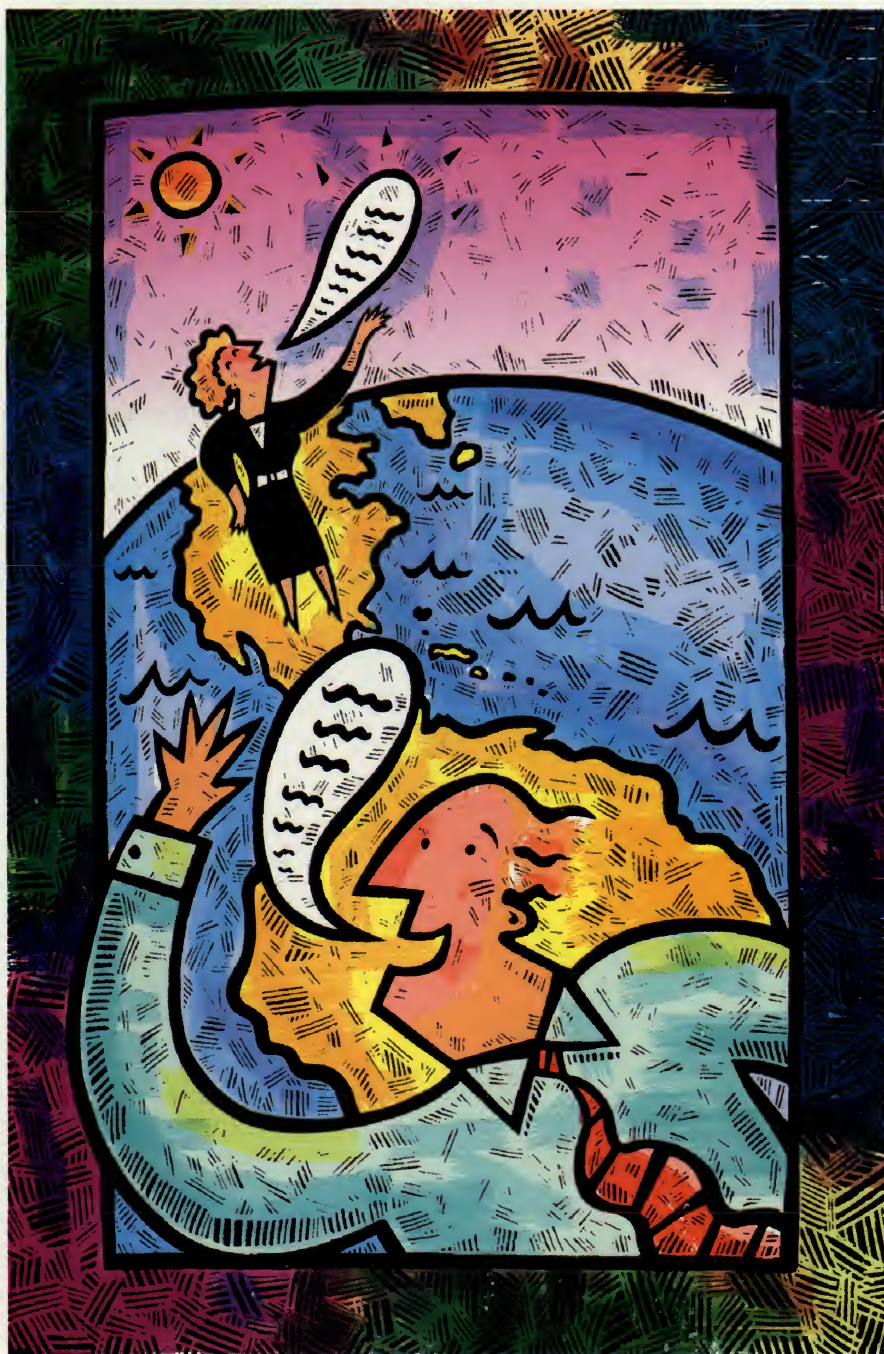


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